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BULLETIN
OF THE
NATURAL HISTORY SOCIETY
OF
BRITISH COLUMBIA.

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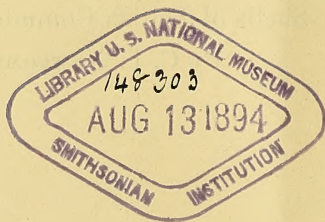
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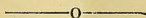
By C. F. NEWCOMBE, M.D.

ART. V—Report on the Marine Shells of British Columbia.

By C. F. NEWCOMBE, M.D.



PRELIMINARY LIST
OF THE
MAMMALS OF BRITISH COLUMBIA.



It will be seen that in the following list nearly all the smaller Mammals are left out, for the very good reason that sufficient material is not on hand whereby to speak from, and perhaps the best excuse I have to offer for publishing a list is to show just what is wanted to make a more satisfactory one. We know that the number of small Mammals in British Columbia is far from insignificant, but just what *species* we have, and as to their distribution and relative abundance we are with respect to many of them entirely ignorant. It is therefore desirable that collecting in this direction be prosecuted more earnestly by members of the Society and others interested in the natural history of the Province. *

* Full directions and material for preparing and preserving specimens will be furnished free by the Museum.—J. F.

AMERICAN ELK, "WAPITI." *Cervus canadensis*. (Erxleben.)

At one time distributed over the southern portion of the mainland, now extinct there. Still tolerably abundant on Vancouver Island, chiefly through the interior, West Coast, Comox district and to the northward.

* WOODLAND CARIBOU. *Rangifer caribou*. (Kerr.)

Through the interior of the mainland from the Columbia River to the northern limits or the Province. Abundant in many places throughout this range.

MOOSE. *Alce americanus*. (Jardin.)

Confined almost entirely to the Arctic slope of the Province, Peace River and Cassiar. Has been taken on the Pacific side in the neighbourhood of Fort George.

* Reports have reached me on several occasions of the existence of Caribou on Graham Island, Queen Charlotte group. Mr. James King while exploring there this year came upon the tracks of what he took to be Elk, and Mr. William Charles of this City, has the head of a Caribou which the Indians say was killed of Graham Island. If either species are to be found there, it is strange the fact is not better known.

BLACK-TAILED DEER. *Cariacus columbianus*.

West of the Cascades from Washington to Alaska, including all the larger Islands except the Queen Charlotte Group. Abundant.

MULE DEER. *Cariacus macrotis*.

Mainland, east of and including the Cascade mountains from Kootenay to Chilcotin, and ranging into the wooded portions of the Cariboo district. Very abundant.

WHITE-TAILED DEER. "Common Deer." *Cariacus virginianus*.

Confined to the southern portion of the Province, east of the Cascades. Okanagan and Kootenay.

ANTELOPE GOAT. "White Goat." *Mazama montana*.

Found on nearly all the mountains of the mainland, its abundance centering along the summit of the Coast range. Very abundant.

BIGHORN. "MOUNTAIN SHEEP." *Ovis canadensis*. (Shaw.)

The mountains of the mainland, except the Coast range, from Kootenay to Cassiar, Similkameen, Bridge River and Chilcotin. Abundant.

FLYING SQUIRREL. *Sciuropterus oregonensis*.

The mainland at large. Nowhere common.

RICHARDSON'S CHICKAREE. (SQUIRREL.) *Sciurus hudsonius richardsoni*.

Interior of the mainland. Abundant.

DOUGLASS'S CHICKAREE. *Sciurus hudsonius douglassi*.

Mainland west of the Cascades. Common.

VANCOUVER CHICKAREE. *Sciurus hudsonius vancouverensis*.

Vancouver Island. Common.

TOWNSEND'S CHIPMUNK. *Tamias townsendii*.

Vancouver Island, and the mainland west of the Cascades.

COLUMBIA CHIPMUNK. *Tamias quadrivittatus affinis*. (Allen.)

The mainland east of the Cascades.

PARRY'S MARMOT. *Spermophilus*. (Sp.?)

Southern portion of the mainland east of the Cascades.

HOARY MARMOT. *Arctomys caligatus*.

The Mainland and Island. Abundant.

YELLOW-FOOTED MARMOT. *Arctomys*. (Sp.?)

One specimen taken at Alberni by Mr. Frank McQuillan, September 1893, and presented to the Museum.

SEWELLEL, "SHOWL'T." *Aplodontia rufa*.

Taken by J. K. Lord at Chilliwack, in 1860. I have never seen it, and the people living there now of whom I have enquired know nothing about it. It has been reported from other portions of the Province but no specimens to my knowledge have been taken.

BEAVER. *Castor fiber*.

At one time distributed throughout the greater portion of the Province, now fast disappearing except in the unsettled districts, where it is still fairly abundant. Not uncommon on Vancouver Island.

MUSK RAT. *Fiber zibethicus*.

Mainland east and west of Cascades. Tolerably common.

PORCUPINE. *Erethizon epixanthus*.

The mainland at large. Tolerably common.

LITTLE CHIEF HARE. *Lagomys princeps*.

The mainland chiefly in the interior. Abundant.

NORTHERN HARE. *Lepus americanus*.

Interior of the mainland and northward to the boundaries of the Province. Abundant.

WESTERN VARYING HARE. *L. americanus washingtoni*.

West of the Cascades.

OREGON GOPHER. *Thomomys talpoides douglassi*.

Southern portion of the mainland east of the Cascades.

PANTHER, "PUMA," "MOUNTAIN LION," "COUGAR." *Felis concolor*.

This animal is said to range as far north as the 60th degree, but I have no record of its occurrence in British Columbia above the 52nd deg. It is very rare anywhere in the interior of the mainland. It is tolerably common west of the Cascades, but its centre of abundance seems to be on Vancouver Island, where it appears to hold its own notwithstanding the numbers killed annually.

CANADA LYNX. *Lynx canadensis*.

The mainland at large. Abundant in northern portions of the Province. Rare on the coast.

RED CAT. "WILD CAT." *Lynx fasciatus*.

The mainland west of the Cascades. Tolerably common.

GRAY WOLF. *Canis occidentalis*.

The Province at large. Common along the coast and some portions of Vancouver Island. A black variety of this animal is also found both on the Island and Mainland.

CAYOTE. "PRAIRIE WOLF." *Canis latrans*.

Open country east of the Cascades. Sometimes straggling well into the wooded portions of the Cariboo district. Tolerably common.

RED FOX. *Vulpes fulvus*.

With its colour phases, "Black," "Silver Gray," and "Cross." The mainland east of the Cascades and ranging northward to the boundaries of the Province. Nowhere abundant.

BLACK BEAR. *Ursus americanus*.

Common along the coast and throughout the wooded districts of the mainland, Vancouver and Queen Charlotte Islands.

GRIZZLY BEAR. *Ursus horribilis*.?

Confined to the mainland, where it ranges sparingly over its entire length and breadth. It is probably more abundant on the northern coast than anywhere in the interior.

NOTE.—It has been conceded that a revision of the large bears of temperate North America is needed, and a competent naturalist at Washington has been entrusted with the work of such revision. Until the result of his labours has been made known it will not be safe to say just what particular species occur in British Columbia, or whether we have more than one. It may be possible that hybridism has something to do with the variety of colors found on the mainland.

RACCOON. *Procyon lotor*.

The Province west of the Cascades, including Vancouver and most of the larger Islands. Abundant.

LAND OTTER. *Lutra canadensis*.

Vancouver Island and the mainland. Chiefly coastwise.

SKUNK. *Mephitis*. (Sp.?)

The mainland at large. Common.

LITTLE STRIPED SKUNK. *Spilogale phenax latifrons*.

The mainland west of the Cascades. Very abundant on the coast.

MINK. *Lutreola vison*.

Vancouver Island and the mainland. Abundant.

WEASEL. *Putorius erminea*.

Mainland at large. Tolerably common.

CALIFORNIA BAT. *Vespertilio nitidus*.

Vancouver Island and the coast of the mainland.

MARTIN. *Mustela caurina*.

The Province at large including Vancouver and some of the larger Islands.

FISHER. *Mustela pennanti*.

Found throughout the greater portion of the mainland. I have no record of its occurrence on Vancouver Island.

WOLVERINE. *Gulo luscus*.

Irregular through the interior of the mainland. Also along the northern coast and Vancouver Island.

SEA OTTER. *Enhydris lutris*.

Has been taken off the shores of Vancouver and Queen Charlotte Islands.

FUR SEAL. *Callorhinus ursinus*.

HAIR SEAL. *Phoca vitulina*.

SEA LION. *Eumetopias stelleri*.

ART. II.

—NOTES—

ON THE OCCURRENCE OF NEW AND RARE FISH

—IN—

BRITISH COLUMBIA.

—o—

CYNOSCION NOBILIS. Weakfish. White Bass.

A specimen of this handsome fish was obtained by Mr. Phillips Wolley in Sooke Harbour, last January.

It was found on the surface of the water, in distress, and surrounded by Dogfish, which had mutilated its pectoral and caudal fins to such an extent that it was unable to escape. This fish has not been previously recorded north of Cape Mendicino. Its weight was 45 lbs. Apart from its injuries, it appeared in good condition, although nothing was found in its stomach. The skin was forwarded to Dr. Jordan for identification.

ONCORHYNCHUS KENNERLYI.

Mr. C. Worsfold forwarded a specimen of this little salmon from Shawnigan Lake, where it was caught with spoon bait. It has not hitherto, to my knowledge, been found west of the Cascade Mountains, and its occurrence on Vancouver Island is certainly remarkable. It does not appear to be plentiful in the lake, and nothing has been learned of its life history, but now that attention has been called to the fact that it is to be found so close to Victoria, perhaps some information may be obtained concerning its habits.

In the Annual Report of the Canadian Fisheries Department a description is given by Dr. Jordan of a new species of land-locked salmon in British Columbia.

ONCORHYNCHUS KAMLOOPS.

With all due deference to that distinguished ichthyologist, I must take exception to this fish being classed among the *Oncorhynchi*. The anal fin rays number but 11 or 12 and it should therefore be included in the genus *Salmo*. Dr. Jordan thinks it may possibly be descended from the Spring Salmon, *O. chowicha*, but for my own part I fail to see, from the description, where it differs from *S. gairdneri* in any respect. Unfortunately no descrip-

tion is given of the number of pyloric cæca, of the shape of the preoperculum or of the colour of the flesh, which would have helped definitely to have identified the fish.

I have sent to Kamloops for specimens, and when I receive them will send some to Dr. Jordan, who may perhaps be induced to alter his opinion. If it be a new species, I believe it will be found to be distributed throughout the greater portion of the upper country.

COUESIUS GREENI. *Species nova.*

A minnow from a lake near Fort St. James, was obtained from Mr. Traill, the H. B. Co. officer in charge of that post. Its range is unknown, and it appears to be rare in that part of the country. It is a small fish, seldom exceeding six inches in length, and averaging only four. Two specimens were sent to Dr. Jordan, who furnishes the following description.

Head, $4\frac{1}{10}$ in length; depth, $4\frac{1}{10}$. D. 8; A. 8. Scales, 10-57-7. Teeth, 2-4-4-2. Length of largest specimen, $6\frac{1}{8}$ in.

Body robust, the back convex before the dorsal. The profile of head straight and rather steep. The space between the eyes broad and flatish, $3\frac{1}{4}$ -in. head. Snout bluntish, but rather long, $3\frac{3}{4}$ -in. head. The pre-maxillary just above the level of the lower part of the pupil; maxillary reaching almost to the front of the orbit, $3\frac{3}{4}$ -in. head; barbel well developed, not quite at the end of the maxillary; its length considerably less than that of the pupil. Mouth moderately oblique, the lower jaw slightly included. Dorsal fin inserted behind the base of the ventrals and behind the middle of the body at a point mid-way between the pre-opercle and the base of the caudal, the fin of moderate height. Pectoral shortish $1\frac{1}{2}$ -in. head, ventrals nearly 2. Caudal well forked, the lobes equal, $1\frac{2}{5}$ -in. head. Scales larger than in related species, scarcely reduced forward and but little smaller on the back than on the sides. 36 scales in front of the dorsal. Colour dark olive above, the sides reddish silvery. Very slight traces of a lateral band, a dark streak below the eye undulating and extending from the side of the upper jaw to the opercle. Lining of shoulder rather dusky. Fins without definite marking, the upper somewhat dusky.

This species is related to *Couesius plumbeus* of the upper Missouri and Lake Superior region, from which species it differs in the size of the scales and in some details in form. The head is especially large and heavy.

MYLOCHILUS CAURINUS.

A specimen of this chub, taken from Fish-hook Lake, has been sent me from Mr. C. N. Young, of Nanaimo. It has also been reported by Mr. Skinner as occurring in Kennedy Lake, and in the brackish water at the mouth of the stream flowing from it. It is, I believe, rare on Vancouver Island, although common on the Mainland.—A. H. G.

ART III.

REPORT

ON THE

ENTOMOLOGY OF BRITISH COLUMBIA.

(BY W. H. DANBY AND C. DE BLOIS GREEN.)

—O—

It is very pleasing to know that the past year has fully proved British Columbia to be a mine of wealth to the Entomologist; but while the Mainland has produced many rare species of DIURNALS, the palm must be awarded to Vancouver Island, where new species of the HETEROCERA have been found, owing to the untiring energy of members of this Society.

In two instances new genera rewarded diligent work, thus showing that Vancouver Island, in itself, is a grand field of research.

A list of captures during 1892, is given as far as possible; but the names of species belonging to the GEOMETRINA, cannot be included in this report, for the reason that, to get them named by competent authorities takes considerable time, in consequence of the great care necessary to avoid mistakes. Many species have, however, been collected of this family, and their names will probably be known soon, when full information will be given the Society for the benefit of collectors. Other new species, and probably new genera, are expected to be amongst the specimens which have been forwarded East for determination, and until they have been authenticated by comparison with known types, we must rest satisfied with the result as far as known.

In regard to the DIURNALS, much good work has been achieved. The beautiful *Satyrid*, *CHIONOBAS gigas*, which has hitherto been considered strictly local in its habitat on Mount Finlayson, being proved to be generally common in the Highlands of South Vancouver Island. As far as known, *CHIONOBAS gigas* is confined to this Island, no account of its capture on the Mainland being recorded.

During 1892, the Vancouver Island oak tree pest, which has for years defoliated the oaks around Victoria, was conspicuous by its absence. There is no doubt but that the larvæ of this insect (*ELLOPIA somnaria*) were

nearly exterminated by their natural parasite, the Ichneumon fly (*Icestus*, Cress), and the Chrysalides by the attacks of a fungous disease which Professor James Fletcher has had identified by Professor Roland Thaxter as *SPOROTRICHUM globuliferum*, Spegazzini, a fungus which has done splendid work in attacking many other obnoxious insects, the ova also were to a great extent destroyed by a beautiful little PROCTOTRYPID. Owing to these combined circumstances the trees in Beacon Hill Park last year were at their best, being in full leaf and throwing a shade which gave gratification to pleasure seekers during the hot summer.

No great work was done in collecting COLEOPTERA, with perhaps the exception of capturing that rare beetle *Ulochætes leoninus*, which is one of the few short winged species of this family in our fauna, a single specimen being taken at Alert Bay (Can Ent, XXIII, p. 283.), and a few other rare specimens being collected in Victoria, names of which have yet to be received.

Many DIPTERA were collected, names unknown with the exception of *Anisopogon ludius*, n sp., named by Mr. D. W. Coquillett, Los Angeles, Calif, which was captured at Goldstream, on Mount Austin (Can Ent, XXV, p. 21).

Amongst the ARACHNIDÆ very little was achieved, the species taken being collected more for friends than study. However a few specimens were kindly named by Dr. Nathan Banks, of Washington, D. C., amongst them being new species of *PARDORA*, and *CORIARACTINE*, also a variety of *EPEIRA insularis*, Hentz.

The Society tenders its thanks to the following gentlemen for their kind assistance in naming and donating specimens, and helping its members to classify their captures: Mr. W. H. Edwards, Coalburgh, W. Va.; Mr. B. Neumoegen, New York; Professor James Fletcher, Ottawa, and Professor J. B. Smith, Washington, D. C.

It is the sincere desire of the entomological members of this Society to see the Museum collection increase, and to that end they intend as far as possible to contribute series or types of all species captured, so that not only the members, but visitors, may obtain what information is possible as to the Entomology of British Columbia, especially as regards the LEPIDOPTERA. Among the gifts to the Museum cabinet in 1892, were rare Coleoptera from Professor James Fletcher, including *LIPAROCEPHALUS brevipennis*, which was only previously known by the unique type specimen. Various RHOPALOCERA and HETEROCERA was presented by members, and the specimen of *Ulochætes leoninus* was from Mr. Harry Pidcock.

PRELIMINARY CHECK LIST

-OF-

LEPIDOPTERA COLLECTED IN BRITISH COLUMBIA.

Those marked * having been taken on Vancouver Island.

RHOPALOCERA - - DIURNALS - - BUTTERFLIES.		
	LOCALITY.	AUTHORITY.
PAPILIO.		
* 1 <i>ajax</i> Linn.	Duncan's.	W. F. Burton.
2 <i>daunus</i> Bdv.	Enderby.	C. D' B. Green
* 3 <i>rutulus</i> "	Ubique.	
* 4 <i>turnus</i> Linn.	Enderby.	C. D' B. G.
5 <i>oregonia</i> Edw.	Vernon.	"
* 6 <i>zolicaon</i> Bdv.	Ubique.	
PARNASSIUS.		
* 7 <i>clodius</i> Men.	Goldstream.	W. H. Danby.
8 <i>smintheus</i> Db-Hew.	Enderby.	G. D' B. G.
NEOPHASIA.		
* 9 <i>menapia</i> Feld.	Ubique.	
PIERIS.		
* 10 <i>napi</i> Esp.	Ubique.	
* 11 <i>pallida</i> Scud.	"	
* 12 <i>venosa</i> "	"	
* 13 <i>occidentalis</i> Reak.	Enderby.	C. D' B. G.
ANTHOCHARIS.		
* 14 <i>ausonides</i> Bdv.	Victoria.	W. H. Danby.
* 15 <i>sara</i> "	"	"
* 16 <i>stella</i> Edw.	"	"
17 <i>flora</i> "	Enderby.	C. D' B. G.
COLIAS.		
* 18 <i>eurytheme</i> Bdv.	Victoria.	W. H. Danby.
* 19 <i>ariadne</i> Edw.	"	"
* 20 <i>keewaydin</i> "	"	"
21 <i>occidentalis</i> Scud.	Goldstream.	C. D' B. G.
* 22 <i>philodice</i> Gdt	Enderby.	"
* 23 <i>var albinic</i> Edw.	"	"

THECLA.

	LOCALITY.	AUTHORITY.
* 24 <i>iroides Bdv.</i>	Ubique.	
* 25 <i>irus Gdt.</i>	"	
* 26 <i>melinus Hbn.</i>	"	
27 <i>californica Edw.</i>	Goldstream.	C. D' B. G.
28 <i>eryphon Bdv.</i>	Ubique.	
29 <i>sæpium "</i>	Enderby.	C. D' B. G.
* 30 { <i>blenina Hew.</i>	Goldstream.	"
{ <i>var siva Edw.</i>		
31 <i>titus Fabr.</i>	Enderby.	"

LYCÆNA.

32 <i>heteronea Bdv.</i>	Enderby.	C. D' B. G.
* 33 <i>antiacis "</i>	Ubique.	
* 34 <i>phileros "</i>	"	
* 35 <i>sæpiolus "</i>	Victoria.	W. H. Danby.
36 <i>sagittigera Feld.</i>	Vernon.	C. D' B. G.
37 <i>pheres Bdv.</i>	"	"
* 38 <i>amyntula "</i>	Goldstream.	W. H. Danby.
39 <i>acmon Db-Hew.</i>	Vernon.	C. D' B. G.
* 40 { <i>pseudargiolus</i> }	Ubique.	
{ <i>var lucia</i> }		
* 41 <i>scudderii Edw.</i>	Goldstream.	C. D' B. G.
* 42 <i>mellissa ? "</i>	"	W. H. Danby.
43 <i>comyntas Gdt.</i>	Enderby.	C. D' B. G.

CHRYSOPHANUS.

* 44 <i>helioides Bdv.</i>	Ubique.
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DANAIS.

* 45 <i>archippus Cram.</i>	Vernon.	C. D' B. G.
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ARGYNNIS.

* 46 <i>bremnerii Edw.</i>	Ubique.	
* 47 <i>epithore Bdv.</i>	"	
* 48 <i>zerene ? "</i>	Victoria.	W. H. Danby.
* 49 <i>myrina Cram.</i>	Lansdowne.	C. D' B. G.
* 50 <i>rhodope Edw.</i>	Goldstream.	W. H. Danby.
51 <i>nevadensis Edw.</i>	Enderby.	C. D' B. G.
52 <i>leto Behr.</i>	"	"

MELITÆA.

* 53 <i>cooperi ? Behr.</i>	Mt. District.	W. H. Danby.
* 54 <i>rubicunda Hy-Edw.</i>	Victoria.	"
* 55 <i>taylori Edw.</i>	"	"
* 56 <i>nubigena Behr.</i>	Enderby.	G. D' B. G.
57 <i>whitneyi "</i>	"	"

PHYCIODES.

* 58 <i>pratensis "</i>	Ubique.
* 59 <i>tharos Dru.</i>	"
60 <i>var morpheus Edw.</i>	"

GRAPTA.

- * 61 satyrus *Edw.*
 * 62 silenus "
 * 63 zephyrus "
 64 faunus "
 65 j album *Bd-Lec.*

LOCALITY.	AUTHORITY.
Victoria.	W. H. Danby.
Goldstream.	C. D' B. G.
"	"
"	"
Enderby.	"

VANESSA.

- * 66 antiopa *Linn.*
 * 67 californica *Bdv.*
 * 68 milberti *Gdt.*

Ubique.	
Beacon Hill.	W. H. Danby.
Ubique.	

PYRAMEIS.

- * 69 atalanta *Linn.*
 * 70 cardui "
 * 71 carye *Hbn.*

"	
"	
Victoria.	W. H. Danby.

LIMENITIS.

- * 72 lorquini *Bdv.*

Ubique.

CENONYMPHA.

- * 73 ampelos *Edw.*

"

EREBIA.

- 74 epipsodea *Butl.*

Enderby. C. D' B. G.

SATYRUS.

- 75 { alope
 var ariane } *Bdv.*

"

C. D' B. G.

CHIONOBAS.

- * 76 gigas *Butl.*
 77 californica *Bdv.*

Goldstream. W. H. Danby.
 Enderby. C. D' B. G.

PAMPHILA.

- * 78 agricola *Bdv.*
 * 79 nevada *Scud.*
 80 { cernes
 var ahaton } *Edw.*

Ubique.
 Shawnigan L. C. D' B. G.
 Vernon. "

NISONIADES.

- * 81 propertius *Lint.*
 82 juvenalis *Fabr.*
 83 icelus *Lint.*

Victoria. W. H. Danby.
 Goldstream. C. D' B. G.
 Langford. "

CARTEROCEPHALUS.

- 84 mandan *Edw.*

Somenos. "

THYMELICUS.

- 85 garita *Reak.*

Vernon. "

AMBLYSCHIRTES.

- * 86 vialis *Edw.*

Goldstream. "

	LOCALITY.	AUTHORITY.
PYRGUS.		
87 <i>cæspitalis</i> <i>Bdv.</i>	Goldstream.	C. D' B. G.
88 <i>tessellata</i> <i>Scud.</i>	Enderby.	"
EUDAMUS.		
89 <i>pylades</i> <i>Scud.</i>	Goldstream.	"
PHOLISORA.		
90 <i>catullus</i> <i>Fabr.</i>	Vernon.	"

All taken on Vancouver Island.

HETEROCERA, — — NOCTURNALS, — — MOTHS.		
	LOCALITY.	AUTHORITY.
SPHINGIDÆ.		
MACROGLOSSINÆ.		
1 <i>Hemaris rubens</i> <i>Hy-Edw.</i>	Victoria.	W. H. Danby.
CHÆROCAMPINÆ.		
2 <i>Deilephila calverleyi</i> ?	"	"
ARCTIIDÆ.		
ARCTIINÆ.		
3 <i>Epicallia virginalis</i> <i>Bdv.</i>	"	"
4 <i>Arctia superba</i> <i>Stretch.</i>	Ubique.	
5 <i>Leptarctia</i> { <i>californiæ</i> <i>Walk.</i> var <i>latifasciata</i> <i>Butl.</i>	Victoria.	W. H. Danby.
6 <i>Pyrharetia isabella</i> <i>S. & A.</i>	Ubique.	
7 <i>Antarctia rubra</i> <i>Neum.</i>	"	
8 <i>Elpis</i> { <i>rubra</i> var <i>danbyi</i> } <i>Neum.</i>	Victoria.	W. H. Danby.
9 <i>Spilosoma virginica</i> <i>Fabr.</i>	Ubique.	
10 <i>Halisidota maculata</i> <i>Harr.</i>	"	
11 subalpina <i>French.</i>	Victoria.	W. H. Danby.
NOTODONTIDÆ.		
†12 <i>Eumelia danbyi</i> <i>Neum.</i>	Victoria.	W. H. Danby.
13 <i>Pheosia portlandia</i> <i>Hy-Edw.</i>	"	"
14 <i>Cerura occidentalis</i> <i>Lint.</i>	Ubique.	
BOMBYCIDÆ.		
15 <i>Clisiocampa californica</i> <i>Pack.</i>	"	
16 <i>Tolyte velleda</i> <i>Stoll.</i>	"	
17 <i>Gastropacha americana</i> <i>Harr.</i>	"	
THYATRIRIDÆ.		
NOCTUINA.		
18 <i>Euthyatira pudens</i> <i>Linn.</i>	Fowl Bay.	C. De B. Green

NOCTUIDAE.		LOCALITY.	AUTHORITY.
19	<i>Panthea fureilla Pack.</i>	Victoria.	W. H. Danby.
20	<i>Momophana comstocki Grt.</i>	"	"
21	<i>Harpyia albicoma Strk.</i>	Ubique.	
22	<i>Acronycta felina Grt.</i>	"	
23	<i>oblinita S. & A.</i>	Victoria.	W. H. Danby.
24	<i>Peridroma occulta Linn.</i>	"	"
25	<i>Rhizagrotis confusa Smith.</i>	"	"
26	<i>Carneades euroides Grt.</i>	"	"
27	<i>insignata Walk.</i>	"	"
28	<i>Feltia subgothica Steph.</i>	Ubique.	
29	<i>Manestra liquida Grt.</i>	"	
30	<i>picta Harr.</i>	"	
31	<i>segens Walk. }</i> <i>{ var cinnabarina Grt. }</i>	Victoria.	W. H. Danby.
32	<i>olivacea Morr.</i>	Ubique.	
33	<i>cuneata Grt.</i>	Victoria.	W. H. Danby.
34	<i>Haduna laterita Hbn.</i>	Ubique.	
35	<i>devastatrix Brace.</i>	"	
36	<i>albina Grt.</i>	"	
37	<i>castanea "</i>	"	
38	<i>divesta "</i>	"	
†39	<i>Polia contadina Smith.</i>	Victoria.	W. H. Danby.
40	<i>Eupsephopæctes procinctus Grt.</i>	"	"
41	<i>Trigonophora periculosa Gn.</i>	Ubique.	
42	<i>Leucania pallens Linn.</i>	"	
43	<i>lapidaria Grt.</i>	Victoria.	W. H. Danby.
44	<i>Tæniocampa pacifica Harr.</i>	Ubique.	
45	<i>alia Gn.</i>	"	
†46	<i>ferrigera Smith.</i>	Victoria.	W. H. Danby.
47	<i>Stretchia normalis Grt.</i>	"	"
48	<i>plusiiformis Hy-Edw.</i>	"	"
49	<i>Metalepsis cornuta Grt.</i>	Victoria.	W. H. Danby.
50	<i>Zotheca tranquila "</i>	Ubique.	
51	<i>viridifera "</i>	Victoria.	W. H. Danby.
52	<i>Orthosia crispa Harr.</i>	"	"
53	<i>Scoliopteryx libatrix Linn.</i>	Ubique.	
54	<i>Litholomia napæa Morr.</i>	"	
55	<i>Xylina oregonensis Harr.</i>	Victoria.	W. H. Danby.
56	<i>pexata Grt.</i>	"	"
57	<i>Xylomiges hiemalis Grt.</i>	Ubique.	
58	<i>crucialis Harr.</i>	Victoria.	W. H. Danby.
59	<i>patalis Grt.</i>	"	"
†60	<i>pulchella Smith.</i>	"	"
†61	<i>candida "</i>	"	"
†62	<i>cognata "</i>	"	"
63	<i>Pleroma obliquata "</i>	"	"
†64	<i>apposita "</i>	"	"

	LOCALITY.	AUTHORITY.
65 <i>Calocampa nupera</i> <i>Lint.</i>	Ubique.	
†66 <i>Rancora strigata</i> <i>Smith.</i>	Victoria.	W. H. Danby.
67 <i>Behrensia conchiformis</i> <i>Grt.</i>	"	"
68 <i>Plusia corrusca</i> <i>Strk.</i>	"	"
69 <i>Heliothis</i> { <i>dipsaceus</i> <i>Linn.</i> { var <i>phlogophagus</i> <i>G. & R.</i>	"	"
70 <i>Drasteria cærulea</i> <i>Grt.</i>	"	"
71 <i>Euclidia cuspidæa</i> <i>Hbn.</i>	"	"
† n gen. n sp.		
‡ n sp.		



NATURAL SIZE.

FLEMING BROS., PHOTO.

1 EUMELIA DANBYI (Neum.)

2 XYLOMIGES CANDIDA (Smith.)

3 RANCORA STRIGATA (Smith.)

4 PLEROMA APPPOSITA (Smith.)

5 XYLOMIGES PULCHELLA (Smith.)

6 XYLOMIGES COGNATA (Smith.)

7 TÆNIOCAMPA FERRIGERA (Smith.)

ART. IV.

CATALOGUE

OF THE

CRUSTACEA IN THE PROVINCIAL MUSEUM

VICTORIA.

By C. F. NEWCOMBE, M. D.

In preparing the following Catalogue of the Brachyura and Anomura of British Columbia, the writer has had great assistance from Mr. James E. Benedict and Miss Mary J. Rathbun, of the United States National Museum, Washington.

By their aid all doubtful species have been named or verified, and three species belonging to the Province, but not in the collection of the Museum, have been added to it.

As Brandt's descriptions of his genera and species of Anomura are seldom accessible to students on this side of the American continent, it has been thought advisable to give them somewhat fully. Short notes of all the other species are also given.

The plates are of rare species in the Museum, from photographs taken by Fleming Bros., of Victoria.

DECAPODA BRACHYURA.

TRIBE OXYRHYNCA.

CHIONECETES TANNERI Rathbun.

Proc. U. S. Nat. Mus., vol. XVI., p. 76, 1893. Pl. IV., figs. I. to IV.

Carapax covered with spines arranged in irregular rows, those extending along the lateral margin overhanging and concealing the real margin in the postero-lateral region. Rostral horns longer and narrower than in *opilio*, leaving a V-shaped notch between. Closely allied to *C. opilio*

Deep water Bering Sea to southern extremity of California.

Presented to the Provincial Museum, Victoria, by the Smithsonian Institution.

CHIONÆCETES OPILIO (*O. Fabricius*)

Cancer phalangium O. Fab. (Fauna Groenl., p. 234, 1780).

Cancer opilio O. Fab. Kongelige Danske. Vid. Selsk. Skr. nye. Saml., III., 181, Pl. 1788.

Chionæcetes opilio Krøyer. Natur. Tidskrift (1), 2, p. 249, 1838, in Gaimard, Voyages en Scandinavie, etc., Crust., Pl. 1, 1839.

Chionæcetes behringianus Stimpson. Proc. Bost. Soc. Nat. Hist., VI., p. 84, 1857.

Chionæcetes opilio (O. Fab.) Rathbun *loc. cit.*, Pl. IV., figs. 5-7.

Carapax very broad posteriorly, covered with numerous unequal rough prominences, wart-like about the middle. Inferior antero-lateral margin with about fourteen small bifid teeth. Feet everywhere slightly pubescent.

Victoria, one specimen from deep water.

Range, Norway, Newfoundland, Greenland, Arctic Alaska, Behring Strait, B. C.

Provincial Museum, Victoria.

HYAS LYRATUS Dana.

Amer. Journ. Sci. (2) YI., p. 268, 1851. Crust. U. S. Expl. Exped. 1, p. 86. Pl. I., f. 1, 1852.

Stimpson, Jour. Bost. Soc. Nat. Hist. VI., p. 450, 1857.

Rathbun, Proc. U. S. Nat. Mus. vol. XVI., 1893. Pl. III.

Carapax broad posteriorly, lyrate, strongly tuberculate, broad behind the eyes, forming a winged expansion. Beak smooth, of moderate size; horns acute, straight. Chelipeds long and strong.

Dredged off Victoria, Comox and Clayoquot in 10 to 20 fms.—(C.F.N., &c.)

Provincial Museum, Victoria.

HYASTENUS LONGIPES Dana.

Chorilia longipes Dana. Am. J. Sci. 2, XI., p. 269, 1851; Crust., U. S. Ex. Exp. 1, p. 1. Pl. I., fig. 5. Stimpson *loc. cit.*

Hyastenus longipes Miers. Jour. Linn. Soc. Lond., XIV., p. 658, 1879.

H. longipes Rathbun, *loc. cit.*, p. 85. Pl. VII.

Carapax without pubescence, somewhat distantly tuberculate, a sharp spine on each side at the branchial region. Rostrum pubescent, long, and bifid with horns nearly parallel. Legs long and slender, except first pair, the arm of which is trigonal, with spinulose margins.

Campbell Island, B. C.—(J. Richardson.)

Range, Alaska to San Diego, Cal. *Hyastenus japonicus* Miers, is, apparently, identical with *longipes*. (Rathbun *loc. cit.*)

Presented to Provincial Museum, Victoria, by Smithsonian Institution.

SCYRA ACUTIFRONS Dana.

Amer. Journ. Sci. (2) XI., p. 269, 1851; Crust. U. S. Expl. Ex., I., p. 95, Pl. II. fig. 2, 1852. Stimpson, *loc. cit.*

Smith, Rep. Geol. Surv. Can., 1878-1879, p. 210 B.

Rathbun, Proc. U. S. Nat. Mus., XVI., 1893, p. 88.

Carapax ovate, spineless, with all the regions strongly protuberant, and separated by deep grooves. Rostrum short and very wide at the base, flattened horizontally into a leaf-like form, horns acute. In females the regions are less elevated. Prof. Smith (*loc. cit.*) points out that Dana's figures were drawn from females and young males. In adult males the chelipeds are proportionately much larger in every way.

Queen Charlotte Islands.—(Dr. Dawson.)

Victoria, common low water to 20 fms. (C. F. N.)

Range, Kadiak Alaska, to Southern California.

Provincial Museum, Victoria.

OREGONIA GRACILIS Dana.

U. S. Exploring Exped. Crust., I., p. 106. Pl. III., f. 2.

Smith, S. J., Report Geol. Surv. of Canada 1878-79, p. 209 B.

Oregonia hirta Dana, *loc. cit.* Pl. III., f. 3.

Stimpson Bost. Journ. Nat. Hist. Vol. VI., 1857, p. 456.

Carapax triangular, rounded behind, its surface rough and granular, slightly pubescent. A long, slender, nearly transverse spine behind the orbit. Rostrum dividing into two long, slender nearly parallel horns which are, usually, in life decorated with algae, sertularians, etc. Mr. J. I. Smith points out (*loc. cit. supra*) that the larger males agree with Dana's description of *O. gracilis* and the females with *O. hirta*. The adult female specimens have a very broad nearly orbicular abdomen, while the apparently sterile females, though large, show considerable approach to the male in the form of the carapax, etc., and their abdomen is much narrower and elliptical.

Victoria to Comox on the East Coast of Vancouver Island, and at Clayoquot Sound on the West Coast of Vancouver Island.—(C. F. N.) Port Simpson near the North end of Vancouver Island, and Queen Charlotte Islands.—(Dr. Dawson.) All at low water or in shallow dredgings.

Provincial Museum, Victoria.

PUGETTIA RICHII Dana.

U. S. Expl. Exp. Crust. I., p. 117, Pl. IV., fig. 3, 1852. Stimpson, *loc. cit.*, p. 457.

The post orbital expansions have two acute lobes; carapax more triangular than in *gracilis*, and armed with short spines in the different regions; anterior feet large.

Clayoquot Sound, V. I., in roots of *Macrocystis pyrifera*.—(C. F. N.)

Dredged in Barclay Sound, V. I., by U. S. Fish Commission Steamer Albatross. Also found at San Diego.

Provincial Museum, Victoria.

PUGETTIA GRACILIS Dana.

U. S. Ex. Exp., Crust, 1, p. 117, Pl. IV., f. 3.

Stimpson, Bost. Journ. Nat. Hist. VI., 1857, p. 456.

Carapax smooth, lyrate, with large post-orbital triangular expansions. A deep constriction divides the hepatic from the branchial region. Rostrum of moderate length, horns acute; diverging. Curled setae on each side of the base of the rostrum and the front of the gastric region.

Victoria common, Nanaimo, Comox, Clayoquot.—(C. F. N.) Queen Charlotte Islands.—(Dr. Dawson.)

Provincial Museum, Victoria.

PUGETTIA (MIMULUS) FOLIATA Stimpson.

Mimulus foliatus. Ann. Lyc. Nat. Hist., New York, Vol. VII., 1860, fig.

Miers, Journ., Linn. Soc., Lond., XIV., 1879, p. 649.

Pugettia foliata, Rathbun, m. s.

Carapax unarmed, quadrate, widest across the postero-lateral angles, gently narrowing down towards the antero-lateral angles. Orbits small. Rostrum broad at the base, dividing into two short approximate horns, which are provided with short curled setae on the upper surface. Colour pink.

Clayoquot Sound, in roots of *Macrocystis*.—(C. F. N.)

Miss Rathbun of Washington, states that the U. S. National Museum has specimens from Unalaska, Barclay Sound and Monterey, and that she is unable to separate the genus from *Pugettia*.

Provincial Museum, Victoria.

EPIALTUS PRODUCTUS Randall.

J. Ac. N. Sc. Phil., VIII., p. 110, 1839.

Dana, U. S. Expl. Exp., Crust. 1, p. 133. Pl. VI., f. 2, 1852.

Stimpson, Bost. Journ. Nat. Hist. VI., 1857, p. 457.

Carapax smooth, quadrate, with two distant teeth on each side. Rostrum wide at base, beaks divaricate with a sharp spine in front of the orbit, notch and spines setose; two sets of curved setae on upper part of beak. Cutting edges of fingers with 12 to 15 small teeth. External maxillipeds and adjoining parts pubescent.

Comox to Victoria, and Clayoquot Sound.—(C. F. N.)

Provincial Museum, Victoria.

Tribe CYCLOMETOPA.

CANCER MAGISTER Dana.

U. S. Expl. Exp. Crust. I., p. 151, Pl. VII., f. 1.

Stimpson, Proc. Cal. Acad. Sci., 1.88, and Bost Journ. Nat. Hist., VI., 1857, p. 458.

The common edible crab. This is the largest *Cancer* of B. C. Carapax granulate, slightly convex; there are ten teeth on each antero-lateral

margin, and of these the posterior pair are the largest, and terminate the greatest diameter.

Range, generally distributed in B. C. Loughborough Inlet, Comox, Nanaimo, Clayoquot, Victoria.—(C. F. N.)

San Francisco to Alaska.—(Stimpson.)

Provincial Museum, Victoria.

CANCER GRACILIS Dana.

U. S. Exp. Exp. Crust., I., p. 153, Pl. VII., f. 2.

Stimpson, Proc. Cal. Acad. Sci., I., p. 88. Bost. Journ. Nat. Hist., VI., 1857, p. 470.

The smallest species of Cancer in B. C. Carapax smooth and very convex, antero-lateral margin nine-toothed; postero-lateral margin slightly toothed near its outer extremity; greatest diameter at the last tooth but one.

Comox, Nanaimo, Victoria, Clayoquot.—(C. F. N.)

Puget Sound to San Francisco.—(Stimpson.)

Provincial Museum, Victoria. (Presented by the Smithsonian Institution.)

CANCER ANTENNARIUS Stimpson.

Proc. Cal. Ac. Sci. I p. 88, 1856. Bost. Jour. Nat. Hist., VI., 1857, p., Pl. XVIII.

Smith, S. J. Report of Geol. Survey of Canada 1878-79, p. 207 B.

Carapax convex, undulated, apparently smooth though minutely granulated especially along the margin. Antero-lateral margin convex, with nine teeth, which are deeply separated and their edges denticulated. Postero-lateral margin with a deep emargination near the outer extremity forming a sharp tooth. A second, slighter, within the first. Feet of the first pair large, carpus and hand short and thick, finger and thumb black. Colour above dark purplish brown, below yellowish white spotted with red.

Virago Sound and Cumshewa Harbour, Queen Charlotte Islands.—(Dr. G. M. Dawson.)

Provincial Museum, Victoria, presented by the Smithsonian Institution.

CANCER PRODUCTUS Randall.

Jour. Ac. N. Sc. VIII., Phila., p. 116, 1839. Dana, U. S. Expl. Exped., Crust. 1, p. 156. Pl. VII., fig. 3.

Stimpson, Proc. Cal. Ac. Sci. I p. 88., and Bost. Journ. Nat. Hist., VI., p. 442.

Smith, S. J. Report of Geol. Surv. Canada, 1878-79, p. 207 B.

Carapax unequally granulose, greatly flattened behind the front; front produced and elevated beyond the orbits. Antero-lateral margin with nine teeth, postero-lateral margin slightly notched. Greatest width at the penultimate tooth. Hand tuberculous above, exterior surface 4 carinate. Colour dark red above, below whitish. Occasionally the carapax is marked with narrow lines of alternate red and pale yellow, following its outline at the margins. The Red Crab.

Comox, Nanaimo, Victoria and Clayoquot (C. F. N.). Queen Charlotte Islands (Dr. Dawson).

Provincial Museum, Victoria.

XANTHO-BELLA Stimpson.

Ann. Lyc. Nat. Hist., New York, Vol. VII., 1860, p. 204.

Carapax rather broad, its length being to its breadth in the proportion of one to one-and-a-half. It is somewhat octagonal in shape, and its antero lateral margin is armed with strong triangular teeth posteriorly, the middle one being the most prominent. Its surface is areolated, smooth, and glabrous for the most part. Front moderately projecting, deeply fissured at the middle. Chelipeds smooth and glabrous, hand short, fingers black. Colour yellowish. Lives under rocks at low water, and occasionally dredged in ten fathoms.

Victoria, (Rev. G. W. Taylor, C. F. N.) Salt Spring Island, Comox and Clayoquot Sound, (C. F. N.) Also reported from Puget Sound and Monterey.

Tribe CORYSTOIDEA.

TELMESSUS CHEIRAGONUS Tilesius.

Cancer cheiragonus Tilesius. Mem. de Acad. de St. Petersb., V., 1815, p. 347.

Telmessus scrratus White. Ann. Mag. Nat. Hist. XVII., 1846, p. 497.

Cheiragonus hippocarcinoides Stimpson. Bost. Journ. Nat. Hist. VI., 1857, p. 465.

Telmessus cheiragonus Benedict. Proc. U. S. Nat. Mus., XV., 1892, p. 224.

Pl. XXV. and XXVI. (This paper gives full synonymy).

Surface of carapax scabrous and setose, with large triangular serrated lateral teeth, of which there are four on the antero lateral and two on the posterior margin, the outer one on each side being much the largest. The inter-antennary front has four small equal teeth.—(Stimpson).

Colour yellowish. Very common and of large size in the Lagoon at Esquimalt, B. C., Strait of Georgia, Nanaimo, Comox, Clayoquot Sound. (C. F. N.) Queen Charlotte Islands.—(Dr. Dawson.)

TRICHOCARCINUS OREGONENSIS Dana.

Trichocera oregonensis Dana. U. S. Exploring Expedition, Crust. 1, p. 299. Pl. XVIII., f. 5.

Stimpson, Bost. Journ. of Nat. Hist., Vol. VI., p. 464, 1857.

Trichocarcinus oregonensis Miers. Proc. Zool. Soc., London, 1879, p. 34.

Smith, S. J.. Rep. Geol. Survey of Canada, 1878-79, p. 207B.

Not unlike small cancers, but the carapax is more rounded, and with thirteen teeth on each side. Leg hairy, antennae long. Colour purplish brown, sometimes red. Finger and thumb black. Generally distributed. Low water to 25 fms. (C. F. N.)

Provincial Museum, Victoria.

Tribe CATOMETOPA.

HETEROGRAPSUS OREGONENSIS Dana.

Pseudograpsus oregonensis Dana. U. S. Exploring Expedition Crust., 1851.

Heterograpsus oregonensis Stimpson. Proc. Acad. Nat. Sci., Phila., 1858.

Smith, S. J., Report of Geological Survey of Canada, 1878-79, p. 206 B.

Carapax quadrate, narrower behind than in front, smooth, bluish-grey above, mottled with darker patches. A woolly patch on the inside of the hand in the male. Posterior feet hairy. Common between tides under stones. Victoria, Comox, Clayoquot, &c.—(C. F. N.)

Provincial Museum, Victoria.

HETEROGRAPSUS NUDUS Dana.

Pseudograpsus nudus, Dana. E. U. S. Exploring Exped., Crust., pl. XX., fig. 7.

Heterograpsus nudus, Stimpson. Proc. Acad. Nat. Sci., Phila., 1858.

Smith, Rept. Geol. Survey of Canada, 1878-79, p. 206 B.

In shape like the last, but usually larger, dark purplish red above. Anterior feet large, pale purple sometimes nearly white, spotted with dark purple. Posterior feet smooth. Common along rocky shores; lives, apparently, as much out of the water as in it. The Purple Shore Crab.

Provincial Museum, Victoria.

FABIA SUBQUADRATA, Dana.

U. S. Exp. Exped. Crust. I. pp. 382. Plate XXIV. f. 5.

Smith, S. J. Report of Geol. Surv. Canada, 1878-79, p. 206 B.

Carapax slightly broader than long, naked and shining. Eyes very small. Victoria in the test of a living specimen of *Echinus purpuratus* (N. H. Soc.). Thurston Stewart Channel, Q. Charlotte Islands in large mussel (Dr. Dawson).

Provincial Museum, Victoria.

PINNIXA FABIA, Dana.

Pinnothera faba, Dana, U. S. Exp. Exped. Crust. I p. 381. Pl. XXIV., f. 4.

Pinnixa faba, Stimpson, Journ. of Bost. Soc. Nat. Hist. VI., 1857, p. 470.

Carapax smooth, shining, and very transverse; width being nearly double its length. Eyes small. Male smaller and broader in proportion than the female, and with larger hands. Very common in specimens of *Schizothærus Nuttalli*, one of the largest clams of this coast. Victoria, Nanaimo, Comox and Clayoquot (C. F. N.).

Provincial Museum, Victoria.

PINNIXA OCCIDENTALIS, Rathbun.

Proc. U. S. National Museum, Vol. XVI. p. 248, 1893.

Carapax transverse, thick, hairy on the sides, surface uneven, crested in the cardiac region. Abdomen of the male narrowing at the first suture and tapering from the second to the terminal segment. Female abdomen very broad. Chelipeds stout, setose. Legs setose. Length of largest male 9.5 mill.; width 19.5 mill. Length of largest female 10.5 mill.; width 20.5 mill. From Unalaska to Gray's Harbour, Washington, and Queen Charlotte's Sound to the north of Vancouver's Island in 238 fms. U. S. Fish Commission steamer Albatross.

Presented to the Provincial Museum, Victoria, by the Smithsonian Institution.

DECAPODA ANOMURA.

Tribe LITHODEA.

In this tribe, the abdomen, or the urogastric portion of the body, commonly called the tail, is always covered on its outer surface with calcareous plates arranged in three or five rows. The external antennae are always much shorter than the thorax. The last pair of feet are very small, different from the rest in shape, and are concealed under the hinder edge of the thorax.

CRYPTOLITHODES SITCHENSIS Brandt. Pl. II.

Melanges Biologiques, Vol. I., p. 654.

Stimpson, Journ. of Bost. Soc. Nat. Hist., VI., 1857, p. 476.

The carapax forms a broad, thin shield, of very uneven surface, completely hiding the legs, antennae, abdomen and all inferior parts of the body, which seem when viewed from below to be placed in the bottom of a cup-like cavity, and only the tips of the eyes are seen from above in the angle between the base of the rostrum and the interior margin of the carapax.—(Stimpson). Surface of carapax and of hands smooth, rostrum with three minute teeth. Fifth pair of feet small, hidden from view, terminal joints furnished with a brush of strong cilia. Colour variable, dark purplish, bright red, &c.

Several large specimens collected in the Queen Charlotte Islands, by Mr. A. Green. Victoria, at low water rather rare.—(C. F. N.)

Provincial Museum, Victoria.

ECHIDNOCERUS CIBARIUS White.

Proc. Zool. Soc., 1848, p. 47. Annulosa, Pl. II., III.

Lopholithodes Mandtii, Brdt., Bull. Phys.-mathem. de l'Acad. de St Petersburg., 1849, VII., p. 174.

Echidnocerus cibarius; Stimpson, Jour. Bost. Soc. Nat. Hist., Vol. VI., 1857, p. 477.

Carapax subtriangular, convex, width much greater than length. The margins are more or less spined all round, and the upper surface is closely

covered with tubercles which are perforated by numerous setae. There is a high conical projection on each branchial region and another in the cardiac region. Rostrum large, projecting and pointed, armed above with three or four short radiating spines arising from one tubercle, of which the three upper are larger than the lower one. External antennae short, appendix of the second joint single, triangular, smooth below but armed above with four rows of spines, those on the sides being the longest. Feet studded above with setigerous tubercles. Chelipeds wide, carpus with a large triangular expansion on the inside, which is spined and tubercled above. Abdomen wide, formed of many plates.

Provincial Museum, Victoria.

ECHIDNOCERUS FORAMINATUS Stimpson. Pl. III.

Ann. Lyc. Nat. Hist., New York, Vol. VII., B. 1860, p. 79.

This species much resembles the last, but in the chelipeds there is a deep smooth sinus below, with a corresponding but rather shallow sinus in the carpus of the second pair of feet. When the two sinuses are brought together a roundish canal is formed.

One specimen collected near Victoria, B. C., and in the Provincial Museum.

Genus PHYLLOLITHODES Brandt.

Bulletin Phys. Mathem. de l'Acad., St. Peters., 1849, VII., 175.

Upper part of the frontal rostrum compressed, somewhat four-angled, greatly exceeding the hooked and pointed lower part. The upper margin is bidentate and the teeth blunt. The appendix of the second joint of the external antennae is divided into three leaflets oblong-linear in shape, rather wider at the apex and arranged in the manner of a fan. The fourth and fifth joints of the external antennae are destitute of spines. The thorax is triangular, rather long, and very high. Carpus of the first pair of feet is scarcely cristate.

P. PAPILLOSUS Brandt.

Petalocerus Bellianus White. Proc. Zool. Soc., 1856, 134.

Although resembling Rhinolithodes in shape and appearance, its generic characteristics are well marked. The want of elongated granulose papilli, &c., on the feet, forms a good distinguishing feature. Length of thorax 1" 10" to 11" ; width 1" 8". Victoria, Middleton, &c.

Provincial Museum, Victoria.

Genus RHINOLITHODES Brandt.

Bull. Phys. Math., 1849, VII., p. 147.

Upper part of the frontal rostrum conical, obtuse, not dentate above, nearly equalling, at all events not exceeding in length the lower hooked part. The appendix of the second joint of the external antennae is triangular,

simple, furnished on the sides only with spines arranged somewhat in rows. Thorax triangular, very high, and its front part is only half as wide as the back part. The gastric and genital regions are confluent, and very convex; the cardiac and intestinal regions are equally confluent, but separated from the branchial and genital region by a very deep semi-lunar fossa.

The carpus of the first pair of feet is evenly crested along the upper and inner margin.

R. WOSNESSENOKIL Pl IV.

this, the only known species, is represented in the Provincial Museum, Victoria.

Tribe HAPALOGASTRINEA.

The basal or anterior abdominal ring, and the two apical rings especially, furnished merely with very thin calcareous laminae, all the remaining parts being soft. The sides of the abdominal portion are not received by the sternum, but conceal the basal joints of the feet.

Genus HAPALOGASTER Brandt.

Melanges Biologiques, Vol. I., 1850, p. 58.

The two apical joints of the external maxillipeds very greatly attenuated at the base so as to appear pedicellate; last joint but one much dilated at the apex and subtriangular. The shell of the thorax is thin, almost membranous, but strengthened evenly and extensively with calcareous matter, nearly heart-shaped, strongly arched and convex on the sides of the posterior half, with four spines on the sides of the anterior half. The branchial regions are very marked but confluent with the intestinal region. The anterior ring of the abdomen covered on each side with a thin calcareous lamina which is transverse, straight, with four rounded angles, without any furrows, and, furthermore, furnished between the said laminae themselves with a thin, narrow, oblong lamellula which is conspicuous in the middle of the back.

HAPALOGASTER INERMIS Stimpson.

Ann. Lyc. Nat. Hist., New York, VII., p. 243, 1860.

Smith, S. J., Report of Geol. Surv. Can., 1878:79, p. 211 B.

Carapax longer than broad, nearly smooth above, margins unarmed and smooth. Rostrum convex above, almost carinated, apex scarcely acute. Feet subcylindrical, almost naked, rugose above, with minute setose tubercles. Plates of first segment of abdomen narrow. Length of carapax 0.4"; width posteriorly 0.38".

A specimen was collected by Dr. Dawson in the Queen Charlotte Islands. In this the chelipeds are very unequal, the right being twice as stout as the left, much less setose, and the excavated fingers are without horny tips.—(S. J. Smith.)

HAPALOGASTER MERTENSII Brandt. Pl. V.

Melanges Biologiques, I., 58.

Thorax leathery above, studded with bristly hairs, which are fascicled and only few in number. Feet of medium size, on the upper and posterior surfaces beset with fascicles of hairs and spines arranged in rows, the spines themselves surrounded by bristly hairs. The right foot of the anterior pair is longer than that of the second pair, the claw is oblong, four-angled, moderately compressed perpendicularly, and covered with spines and rather long fasciculated hairs. The left chela is almost one-third less than the right.

The largest specimen brought back by Mertens has a thorax $8\frac{1}{2}$ " long and the posterior half 9" in width.

As found near Victoria, this species is of a brownish-red colour, the under surface of the legs is bright red and highly polished. Lives under stones and in crevices at low water.—(C. F. N.)

Provincial Museum, Victoria.

Genus DERMATURUS Brandt.

Melanges Biologiques, Vol. I., 1850.

The two apical joints of the external maxillipeds are not much narrower at the base, the last but one is oblong. Thorax tetragonal, not much wider posteriorly, destitute of spines and teeth on the lateral margins, the branchial and the other regions not very distinct; it is covered, as are also the extremities with a very thick calcareous shell. The anterior abdominal ring is furnished dorsally on each side with a subtriangular lamina, furrowed longitudinally above, and diverging at an acute angle outwards and backwards from the lamina of the opposite side, and separated from it, in the middle line, by a cutaneous interval.

DERMATURUS HISPIDUS Stimpson.

Ann. Lye. Nat. Hist., New York, Vol. VII., 1860.

Carapax moderately convex in front. Cardiac transverse sulcus deep. Surface covered with very small setose tubercles or short spines. Lateral margins not projecting but armed with spines longer than the rest. Rostrum rather large, reaching to the tips of the eyes, its apex armed with three spines. Feet thickly set with setose spines. Chelipeds not longer than the ambulatory feet, and the fingers which do not gape, have black, horny, cochlear, apices. Ambulatory feet not flattened. Abdomen hispid like the carapace, the plates of the basal joint broad, and the right margin furnished with a single row of spines which are setose on the sides.

A female measured .85" in length and .9" in width posteriorly.

Campbell Island, B. C., J. Richardson.

Tribe PORCELLANIDEA.

Genus PETROLISTHES Stimpson.

Proc. Acad. Nat. Sci., Phila., 1858.

Carapax depressed, subovate, not wider than long, front triangular, margin more or less undulate, dentate or entire. Eyes fairly large. Peduncle of antennae more or less cristate. Chelipeds wide and flattened. Dactyls of ambulatory feet normal, *i. e.*, short, rather strong and with a single hooklet.

PETROLISTHES RUPICOLUS Stimpson.

Porcellana rupicola. Journ. Bost. Soc. Nat. Hist., Vol. VI., 1857, p. 480.

Petrolisthes rupicolus. Stimpson. Proc Acad. Nat. Sci., Phila., 1858.

Carapax depressed, front triangular with a blunt extremity. Surface of the feet and anterior half of the carapax scarcely rugose with granules but slightly prominent. External antennae one and a half times as long as the carapax. Anterior feet large and broad, margins smooth. Surface of the carpus granulated, but not tuberculated. Pincers smooth with somewhat hooked extremities. Colour, dark purplish red.

Under rocks at low water Victoria, common. Straits of Georgia, Baynes Sound near Comox, and Clayoquot Sound, West Coast of V. I. (C. F. N.) Provincial Museum, Victoria.

Genus PACHYCHELES Stimpson.

Proc. Acad. Nat. Sci., Phila., Dec., 1858.

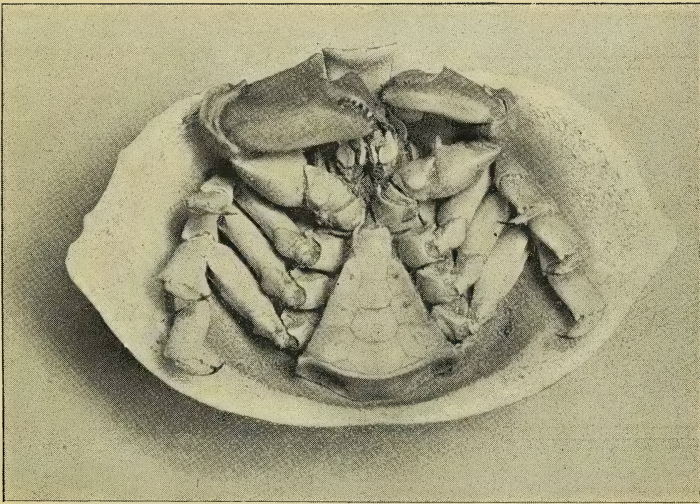
Carapax round ovate, length not greater than the width, epimera free posteriorly, the posterior part quadrate and separated by a cutaneous interval. Front not particularly prominent in the middle, subacute. First joint of the antennae not at all produced. Chelipeds very thick and rugose, with a short carpus. Dactyls of the ambulatory feet normal.

P. RUDIS Stimpson.

Ann. Lyc. Nat. Hist. N. York, Vol. VII., p. 76, f. 5, 1860.

Carapax glabrous, obsoletely granulated, punctate or striate in different parts. Chelipeds very unequal, with a rugose uneven surface above, irregularly tuberculated and granulated, carpus short and angular, its surface strongly granulated and with two rows of tubercles more prominent than the rest.

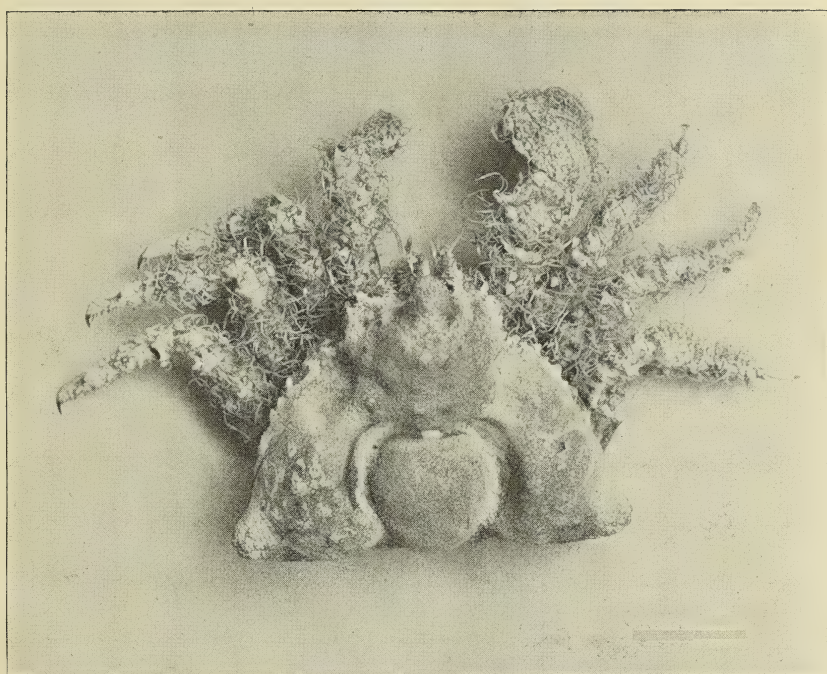
At low water, rare, Victoria, (G. W. T. & C. F. N.) Roots of kelp Clayoquot, common, (C. F. N.)—Provincial Museum, Victoria.



NATURAL SIZE.

CRYPTOLITHODES SITCHENSIS.

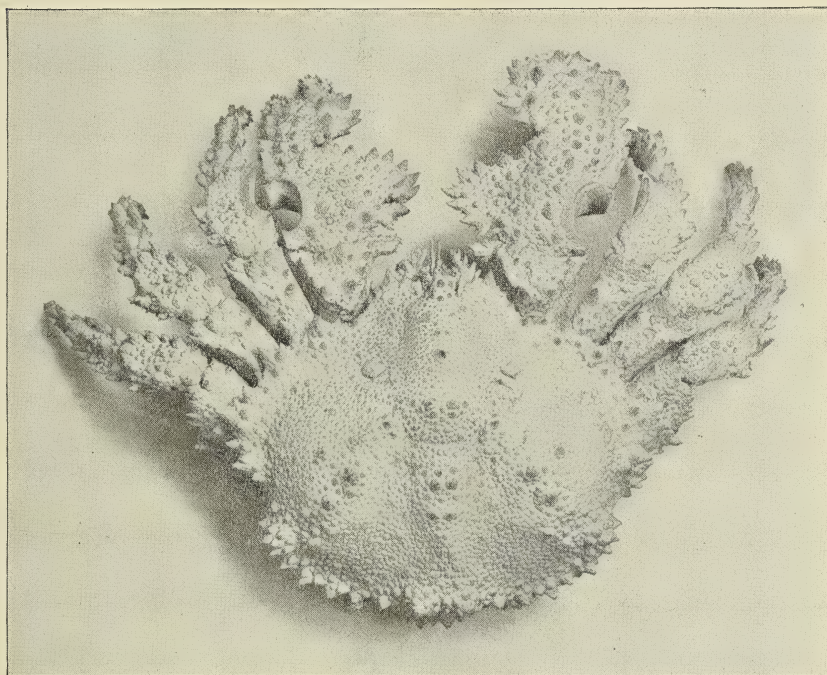
FLEMING BROS. PHOTO.



NATURAL SIZE.

RHINOLITHODES WOSNESSENSKII-BRDT.

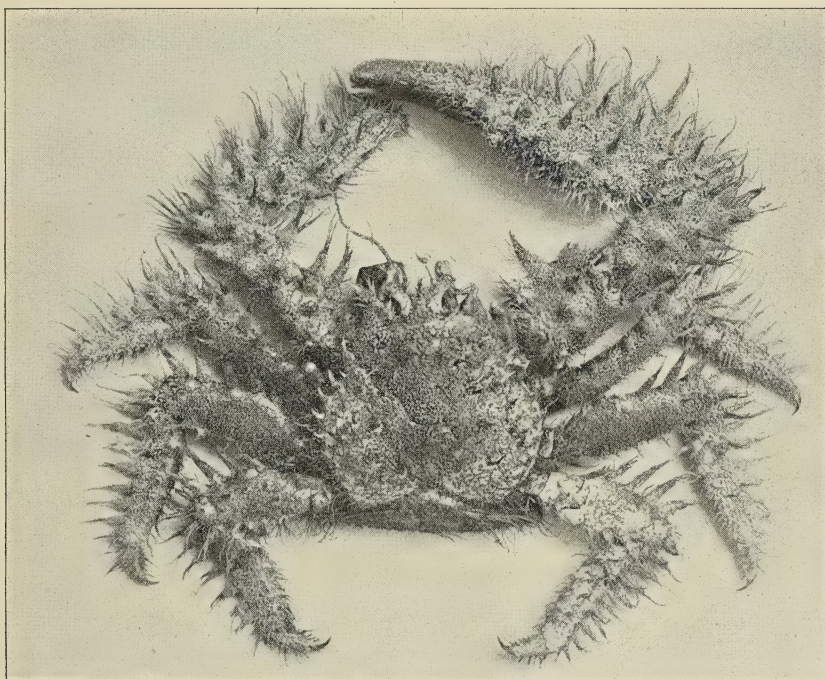
FLEMING BROS., PHOTO.



$\frac{1}{4}$ TH NATURAL SIZE.

ECHIDNOCERUS CIBARIUS, WHITE. VAR.
FORAMINATUS. STIMPSON.

FLEMING BROS., PHOTO.



NATURAL SIZE.

HAPALOGASTER MERTENSII. BRDT.

FLEMING BROS., PHOTO.

ART V.

REPORT

ON THE

MARINE SHELLS OF BRITISH COLUMBIA.

(By C. F. NEWCOMBE, M. D.)

Preliminary Check List of Marine Mollusca of British Columbia, exclusive of
Cephalopoda and Nudibranchiata.

The following list is based on the second Report upon the Mollusca of the West Coast of North America, made to the British Association by the late Dr. P. P. Carpenter, in 1863, and reprinted with other papers by the Smithsonian Institution in 1872.

Additional information has been derived from various papers by Mr. J. F. Whiteaves, F. R. S. Can., &c., Assistant Director, Geological Survey of Canada; viz.:—

1st. "On some Invertebrata from the West Coast of North America, collected by Mr. J. Richardson," in the Canadian Naturalist, Vol. VIII., N. S., No. 8., December, 1878.

2nd. "On some Marine Invertebrata from the Queen Charlotte Islands," appendix C. to Dr. G. M. Dawson's Report on the Queen Charlotte Islands, 1878, published in 1880.

3rd. "On some Marine Invertebrata dredged or otherwise collected by Dr. G. M. Dawson, in 1885, in the Northern part of the Strait of Georgia," &c., &c. Trans. Roy. Soc. Can., section IV., pt. IX, 1886.

For invaluable critical assistance with regard to new and doubtful species, the writer is indebted to Mr. W. H. Dall, of the Smithsonian Institution, Washington, and for opportunities of comparison with named species, to the Rev. G. W. Taylor, of Victoria. The latter has also given notes of species collected by him and not hitherto recorded from this Province.

The following are the principal additions to the molluscan fauna of British Columbia made by various collectors since Mr. Whiteaves' last report.

Xylophaga dorsalis, Turton; *Glycimeris generosa*, Gld.; *Saxicava Norvegica*, Spengler; *Thracia Behringi*, Dall; *Tellina* Sp., (young either of *T. Gouldii*, Cpr., or of *T. inflatula*, Dall, according to Mr. Dall) *Edalina subdiaphana*, Cpr.; *Standella planulata*, Conr.; *Cardium centifilum*, Cpr.; *Modiolaria* Sp. Nov. (Mr. Dall suggests that this species be named after its discoverer, Mr. G. W. Taylor); *Yoldia limatula*, Say.; *Diaphana debilis*, Gld.; *Tornatina inculta*, Gld.; *Tornatina harpa*, Dall; *Tornatina cerealis*, Gld.; *T. puncta coelata*, Cpr.; *Lepidopleurus*, Sp.; *Puncturella Cooperi*, Cpr.; *Leptothyra bacula*, Cpr.; *Alvania castanea*, Möller; *Bittium armillatum*, Cpr.; *Cancellaria Unalashkensis*, Dall; *Solariella varicosa*, Mighels; *Hydrobia Californica*, Tryon; *Drillia cancellata*, Cpr.; *Bela exarata*, Möller; *Odostomia gravis*, Gld.; *Turbonilla chocolata*, Cpr.; *Turbonilla Lordi*, E. A. Smith; *Opalia? planicosta*, Cpr.; *Buccinum cyaneum*, Brug., variety *Mörchianum*, Fischer; *Mohnia Friclei*, Dall; *Chrysodomus fornicatus*, Gmelin; *Chrysodomus phoeniceus*, Dall; *Chrysodomus Kennicotti*, Dall.

With respect to classification. Dr. P. P. Carpenter's arrangement has been followed throughout, with such modifications of nomenclature as have been made by Mr. W. H. Dall and are reported in Mrs. M. Burton Williamson's "Annotated List of the Shells of San Pedro Bay and Vicinity," published in the Proceedings of the United States National Museum, Vol. XV, 1892. It is to be hoped that the large amount of new material lately acquired by the Str. Albatross, of the United States Fish Commission, on the north-west coast of America may soon be fully reported upon, and that Mr. Dall and his associates at the Smithsonian Institution may have an early opportunity of extending to the Pacific shores the advantage of such careful investigations as have added so much to the knowledge of the mollusca of the Atlantic states.

Meantime the following list of authorities for the majority of the species on the list may be of assistance to those who have access to large libraries. For those who have not, the Smithsonian reprint above mentioned will be found to be the most useful book to refer to. Nearly all the references have been verified in the libraries of the British Museum and the Natural History Museum at South Kensington; at the latter with the kind assistance of Mr. E. A. Smith, Curator in charge of the conchological collections.

1. AURIVILLIUS AND LECHE. Ofvers. öfv. de af Vega.-Expedit., 2 parts. Stockholm, 1883 87.
- 1A. ADAMS, A.
Proc. Zool. Soc., 1854.
2. BAIRD, W.
Proc. Zool. Soc., 1863.
Descriptions of new shells, collected by Lord, &c., in British Columbia.

3. BRODERIP AND SOWERBY. Voyage to the Pacific and Bering Straits, performed in H. M. S. "Blossom," Capt. Beechey, R.N., 1825-28.
Zool. Journ., London, VOL. IV., 1829.
4. BRODERIP, W. J.
Proc. Zool. Soc., p. 38., 1824.
5. —
Trans. Zool. Soc., VOL. I., p. 201, pl. 28, fig. 5.
6. BURTON-WILLIAMSON, MRS. Annotated List of Shells of San Pedro Bay and Vicinity.
Proc. U. S. Nat. Mus., VOL. XV., No. 848., 1892.
This list is very well illustrated, and the plates contain sixteen figures of eleven species found in British Columbia.
7. CARPENTER, P. P., B.A., Ph.D. Description of (supposed) New Species and Varieties of Shells, from the Californian and West Mexican Coasts. Principally in the collection of Hugh Cuming, Esq.
Proc. Zool. Soc., PART XXIII., 1855.
8. —Description of Shells from the Gulf of California, and the Pacific Coasts of Mexico and California, part II. By A. A. Gould, M. D., and P. P. Carpenter.
Proc. Zool. Soc., PART XXIV., 1856.
9. —Monograph of the Shells collected by T. Nuttall, Esq., on the Californian Coast, 1834-35.
Proc. Zool. Soc., PART XXIV., 1856.
10. —Report of the Present State of our Knowledge with regard to the Mollusca of the West Coast of North America..
Report of Brit. Assoc. for Adv. Sci. for 1856, published 1857.
11. —Cape St. Lucas Shells, collected by Xantus.
Proc. Ac. Nat. Sci., Phila., 1859.
12. —
Proc. California Acad. Sci., VOL. III., 1863-67.
13. —Supplementary Report on the Present State of our Knowledge with Regard to the Mollusca of the West Coast of North America.
Report of the British Association for the Advancement of Science, for 1863, published August, 1864.
This Report was reprinted with other papers, with a general index, as No. 252 of the Smithsonian Miscellaneous Collections. Washington, December, 1872.
It contains a Table giving a complete list, with short descriptions, of all the West Coast Mollusca known at that date, with their habitat and the principal collectors who obtained them. Short title "The Mollusks of Western North America," by P. P. Carpenter, B. A., Ph. D.
The following papers (C. D. E. F. K. M. N.) are reprinted here :
14. —C. Diagnoses of New Forms of Mollusks, collected at Cape St. Lucas, Lower California. By Mr. J. Xantus.
Ann. Mag. Nat. Hist., London, 1864.

15. ——— *D.* Contributions towards a Monograph of the Pandoridæ.
Proc. Zool. Soc., Nov. 1864.
16. ——— *E.* Diagnoses of New Forms of Mollusca from the Vancouver District.
Ann. Mag. Nat. Hist., VOL. XIV., Dec., 1864; and VOL. XV., Jan., 1865.
17. ——— *F.* Diagnoses of New Forms of Mollusca from the Vancouver District.
Proc. Zool. Soc., Feb., 1865.
18. ——— *K.* Diagnoses of New Forms of Mollusca from the West Coast of North America, first collected by Col. E. Jewett.
Ann. Mag. Nat. Hist., VOL. XV., 1865.
19. ——— *M.* Diagnoses des Mollusques nouveaux provenant de Californie et faisant parti du Musée de l'Institution Smithsonianne.
Journ. de Conchyl., VOL. XII., (3rd Ser., VOL. V.) 1865.
20. ——— *N.* On the Pleistocene Fossils, collected by Col. E. Jewett, at Santa Barbara, California; with Descriptions of New Species.
Ann. Mag. Nat. Hist., VOL. XVII., 1866.
21. ——— Diagnoses of New Genera and Species of Mollusca, collected by Dr. Kennerly near Puget Sound.
Proc. Acad. Nat. Sci., Phila., April, 1865.
22. CHEMNITZ. Martini's Conchylien Cabinet, 1780-95.
23. CONRAD, T. A. Descriptions of New Marine Shells from Upper California, collected by Thomas Nuttall, Esq.
Journ. Acad. Nat. Sci., Phila., VOL. VII.; read Jan. and Feb. 1837; pub. 1834-39.
24. ——— American Marine Conchology.
25. ——— United States Exploring Expedition under Commodore Wilkes. Vol. X. Geology by J. D. Dana. Appendix I, p. 723., Phila., 1849.
26. ——— Pacif. Railroad Reports, Vol. V., 1856; Part 2, Geology. Appendix, Article II., Fossil Shells; and Preliminary Description of Fossil Shells in Geological Report, Wash., 1855.
27. CROSSE, H. Moll. Behring Straits.
Journ. de Conchyl., VOL. XXV.
28. DALL, W. H., A. M., &c.
Amer. Journ. Conchol., VOL. V., Phila., 1869.
29. ———
Amer. Journ. Conchol., VOL. VI., 1871.
30. ———
Amer. Journ. Conchol., VOL. VII., 1871.

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31. ———
Amer. Naturalist, vol. v., 1871.
 32. ———Preliminary Description of New Species of Mollusks from the North-West Coast of America.
Proc. Calif. Acad. Sci., Oct., 1872.
 33. ———Preliminary Descriptions of New Species of Mollusca from the Coast of Alaska, with notes on some rare forms.
Proc. Calif. Acad. Sci., April, 1873.
 34. ———
Proc. Acad. Nat. Sci., Phila., 1873.
 35. ———
Proc. Calif. Acad. Sci., 1877.
 36. ———Report on the Limpets and Chitons of the Alaskan and Arctic Regions, &c. Scientific Results of the Exploration of Alaska. Art. IV. Washington, 1878.
 37. ———Report of the International Polar Expedition to Point Barrow, Alaska, by Lieutenant Ray.
Mollusca, p. 180, pl.—fig. 9, 1885.
 38. ———Contributions to the Natural History of the Commander Islands.
Proc. U. S. Nat. Mus., Oct., 1886.
 39. ———Supplementary Notes on some Species of Mollusks of the Bering Sea and Vicinity.
Proc. U. S. Nat. Mus., Oct., 1886.
 40. ———Scientific Results of Explorations by the U. S. Fish Commission Steamer Albatross. Mollusca and Brachiopoda obtained in 1887-88, p. 341.
Proc. U. S. Nat. Mus., vol. xii., (No. 773) 1889.
 41. ———A Preliminary Catalogue of the Shell Bearing Marine Mollusks and Brachiopods of the Southeastern Coast of the United States.
Bulletin No. 37, U. S. Nat. Mus., 1889.
 42. ———Scientific Results of Explorations by the U.S. Fish Commission Str. Albatross. On some new or interesting West American Shells, &c., &c.
Proc. U. S. Nat. Mus., vol. xiv., (No. 849) 1891.
 43. ———Notes on some recent Brachiopods.
Proc. Acad. Nat. Sci., Phila., 1891.
 44. DALL, W. H., AND PILSBRY, H. A.
Nautilus, Phila., vol. v., June, 1891.
 45. DAVIDSON, T. A Monograph of Recent Brachiopoda.
Trans. Linn. Soc., Lond, vol. iv., 1886-87.

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46. DESHAYES, G. P. Nouvelles Espèces de Mollusques, provenant des côtes de la Californie, du Kamtschatka, &c.
Revue Zoologique par la Societe Cuvierienne, Paris, Dec., 1839.
47. ———
Magasin de Zoologie, Paris, 1840.
Pl. 48, *Cardium Laperousei*.
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Proc. Zool. Soc., Lond., 1849.
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Proc. Zool. Soc., p. 357, Lond., 1854.
49. ——— Catalogue of Conchifera or Bivalve Shells in the Collection of the British Museum. Veneridae, 1853-54.
50. DIXON, CAPT. GEO. Voyage round the World, but more particularly to the N. W. Coast of America. London, 1789.
51. DUCLOS, P. L.
Annales des Sciences Naturelles, vol. XXVI., Paris, May, 1832.
52. ESCHSCHOLTZ, DR. J. E. Zoologische Atlas, &c., Berlin, May, 1829, completed by Rathke, M. H., 1833.
53. FISCHER, P. Review of the B. A. Report, by Dr. P. P. Carpenter.
Journ. de Conchyl., p. 262, Paris, 1857.
54. ———
Journ. de Conchyl., VII., 299, t. 10, f. 2, 1859.
55. FABRICIUS, O. Fauna Groenlandica, Hafn., 1780.
56. GMELIN. Linnaeus. 13th Edition. Lipsiae, 1788-90.
57. GABB, W. H.
Proc. Calif. Acad. Sci., vol. III, 1863-67.
58. GOULD, A. A., M. D. Report on the Invertebrata of Massachusetts. Boston, 1841.
59. ——— Description of Shells from the Gulf of California and the Pacific Coast of Mexico and California.
Proc. Bost. Soc. Nat. Hist., Nov., 1851.
Reprinted with additional descriptions and three plates, about 1855, being a report upon collections made by Col. E. Jewett, Major W. Rich and Lieut. Green, between Panama and San Francisco.
60. ——— United States Exploring Expedition during the years 1835-42.
Mollusca, Phila., 1852.
61. ——— Pacific Railroad Reports, Vol. V., part 2. Appendix Article III.
Recent Shells, Freshwater and Marine. 1856.

62. ——— *Otia Conchologica* : Descriptions of Shells and Mollusks, from 1839-62.
In this work are contained all Dr. Gould's descriptions of Shells published before April, 1862, with emendations, and the dates of each imprint.
63. GRAY, J. E., F. R. S. &c.
Zool. Journ., London, 1824-29.
- 63A. ———
Ann. Phil., Vol. XII., p. 103, 1826
64. ——— Parry's Second Voyage for the Discovery of a North-West Passage.
Zoology. Appendix. Supplement, 1824.
65. ——— Capt. Beechey's Voyage to the Pacific and Bering Straits. (See No. 3.) Zoology. Molluscos Animals and their Shells. Lond., 1839.
66. ———
Proc. Zool. Soc., pp. 69 and 169, 1874.
67. HINDS, R. B.
Proc. Zool. Soc., 1843,
68. ——— Voyage of H. M. S. "Sulphur," Capt. Sir E. Belcher. Vol. II.
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Mollusca, 1844.
69. JAY, J. C. Catalogue of Cabinet, 1839.
70. JONAS, J. H. Zeitschrift für Malakozoologie, No. 7, p. 163, 1845.
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72. KOBELT, W. Jahrbuch der Deutsche Malakozoologie, 1876.
73. ——— Martini-Chemnitz; Neueste ausg., Monog. Trophon, Buccinum, &c.
- 73A. KRAUSE, E. Mollusca of Bering Sea.
Wieg. Arch. für Naturg., Berlin, 1885.
74. LORD, J. K., F. Z. S. The Naturalist in Vancouver Island and British Columbia. London, 1866.
75. MARTYN, THOS. Universal Conchologist. London, 1784.
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Boston Journal of Natural Science, 1843.
77. MIDDENDORFF, DR. A. TH. VON. Beiträge zu einer Malakozoologia Rossica. St. Pétersbourg. 1847.
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81. MÜLLER, O. F.
Proc. Zool. Dan., p. 237, Hafn., 1776.
82. PHILIPPI, R. A.
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83. PILSBRY, H. A.
Nautilus, Phila., July, 1890.
84. REDFIELD, J. H.
Ann. Lyc. Nat. Hist., New York, 1846.
85. REEVE, F.
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86. ———
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Conchologia Iconica, London, 1863.
88. RENIERI, ST. A. Tavola alfabetica delle Conchiglie Adriatiche.
89. SARS, G. O. Moll. Reg. Arct. Norv., Christiania, 1878.
90. SAY, T. American Conchology. New Harmony, 1830-32.
91. SMITH, E. A., F. Z. S. &c. Descriptions of Twelve New Species of Shells.
Proc. Zool. Soc., 1880
92. ———
Ann. Mag. Nat. Hist., VOL. VI., 1880.
93. ——— Observations on the Genus *Astarte*, with a list of the known recent species.
Journal of Conchology, London, July, 1881.
94. SOWERBY, G. B. Catalogue of the Shells contained in the collection of the late Earl of Tankerville, &c., London, 1825.
95. ——— Conchological Illustrations, 1839.
96. ——— Thesaurus Conchyliorum, Vol. I.
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Proc. Zool. Soc., 1846.
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99. STEARNS, R. E. C.
Proc. Calif. Acad. Sci., 1873
100. ———Scientific Results of Explorations by the U. S. Fish Commission Steamer Albatross. XVII. Descriptions of New West American Land, Freshwater, and Marine Shells, &c.
Proc. U. S. Nat. Mus., VOL. XIII., (No. 813) 1890.
101. STORER, D. H.
Boston Journ. of Nat. Hist., VOL. II., 1839.
102. VALENCIENNES, A. Voyage autour du Monde sur la Vénus pendant les années, 1836-39. Par M. du Petit-Thouars. Paris, 1846.
103. WHITEAVES, J. F., F. R. S. CAN., &c. On some Marine Invertebrata from the West Coast of North America.
Canad. Naturalist. VOL. VIII., (N. S., No. 8) Dec., 1878.
104. ———Report of Progress of the Geological Survey of Canada, for 1878-79. Montreal, 1880.
This contains a list of shells collected by Dr. G. M. Dawson, in the Queen Charlotte Islands and descriptions of new species.
105. ———Some Marine Invertebrata collected by Dr. G. M. Dawson on the Coast of British Columbia.
Trans. Royal Soc. Can., Sec. 4, VOL. IV., 1886. Montreal, 1887.
106. ———Notes on some Marine Invertebrata from the Coast of British Columbia.
Trans. Ottawa Field Club, Dec., 1893.
107. WOOD, W. General Conchology. London, 1815.
- WILLIAMSON, MRS. BURTON.
Referred to under B.
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ABBREVIATIONS.

COLLECTORS.

G. M. D.	G. M. Dawson, L.L.D., Geological Survey of Canada.
J. R.	J. Richardson, Geological Survey of Canada.
N. H. S.	Natural History Society of British Columbia.
G. W. T.	Rev. G. W. Taylor, Victoria
W. H.	Mr. W. Harvey, Comox.
C. F. N.	C. F. Newcombe, M.D., Victoria.
W. H. D.	Dr. Dall, of U. S. National Museum, Washington, quoted as authority for species.

PLACES.

Vic.	Victoria, on the south-east coast of Vancouver Island.
Dep. Bay.	Departure Bay, near Nanaimo, east coast of Vancouver Island.
Q. Ch. Sd.	Queen Charlotte Sound, off the north-east coast of Van- couver Island.
Q. C. I.	Queen Charlotte Islands, about 130 miles to the north-west of the northern end of Vancouver Island.

Quatsino Sound is on the north-west coast; Clayoquot and Barclay Sounds
on the south-west coast of Vancouver Island.

LIST OF SPECIES.

CLASS BRACHIOPODA

Family RHYNCONELLIDAE

Genus HEMITHYRIS D'Orbigny

H. psittacea L.

Vic., living, (J. R.) dead, (G. W. T., C. F. N.) Discovery Passage and Johnstone Strait, (G. M. D.) Low water to 70 fms.

Genus TEREBRATULINA D'Orbigny

° *T. caput serpentis* L., var. *unguicula* (Cpr. 17) Davidson 45.

Vic., (J. R., G. W. T., C. F. N.) Strait of Georgia, (G. M. D.) 20 to 70 fms.
In the Nautilus (44) Messrs. Dall and Pilsbry figure this species and compare it with var. *Kiianensis* Dall., from Japan.

Genus TEREBRATELLA D'Orbigny

T. transversa Sby. 97.

Vic., (G. W. T., N. H. S., C. F. N., J. R.) Dep. Bay and Comox, (C. F. N.) Q. Ch. Sd., and Q. C. I., (G. M. D.) 10 to 40 fms.

In Proc. Acad. Nat. Sci., Phil., (43) Mr. Dall figures this species, which is smooth and found in deeper water than the following variety.

T. transversa, var. *caurina* Gld. 62.

Vic., (G. W. T., C. F. N.) Vesuvius Bay, Salt Spring I., (G. W. T.) Nanoose Bay, St. of Georgia, (Cowley). Comox, (Harvey). Low water.

Mr. Dall (*loc. cit.*) retains Gould's name for the rough variety.

Genus LAQUEUS Dall

L. Californicus Dall. 31. Var. *Vancouverensis* Davidson. 45.

Vic., (J. R., C. F. N.) Discovery Passage, Johnstone St., and Q. C. I. (G. M. D.) 20 to 70 fms.

This is a smaller shell than that found in California, though the foramen is comparatively larger.—(Dav.) Colour, livid yellowish brown.

CLASS PELECYPODA

Family TEREDIDÆ

Genus XYLOTRIA Leach

X. fimbriata Jeffrey.

Vic., (G. W. T.)

X. bipinnata Jeffrey.

Vic., (G. W. T., C. F. N.) In driftwood and piles.

Genus XYLOPHAGA Turton.

X. dorsalis Turton.

Vic., (C.F.N.) Dep. Bay, (G.W.T.) In driftwood, &c.

Family PHOLADIDAE

Genus NETTASTOMELLA Cpr.

N. Darwinii Sby. 13, 17.

Vancouver Island, (Lord.)

Genus ZIRPHÆA Leach

Z. crispata L.

Gordon Head, near Vic., (G.W.T.) Q.C.I., (G.M.D.) Burrowing in hard clay, (G.W.T.)

Genus PHOLADIDEA Turton

P. penita Conr. 7, 23.

Vic., (G.W.T., C.F.N., J.R.) Salt Spring I., (G.W.T., C.F.N.) Comox, (W.H., C.F.N.) West Coast of V.I., (Skinner). In shale and limestone.

P. ovoides Gld. 62.

Vic., (J. R.)

Family SAXICAVIDÆ

Genus SAXICAVA F. de Bellevue

S. pholadis L., and varieties *arctica*, &c.

Vic., (G.W.T., C.F.N.) Salt Spring I. and Dep. Bay, (G.W.T., C.F.N.) Comox, (W.H., C.F.N.) Quatsino Sd., &c., and Q.C.I., (G.M.D.)

S. (Panopæa) Norvegica Spengler.

Vic., dead specimens, (G.W.T., C.F.N.)

Genus GLYCIMERIS Lamarek

G. generosa Gld. 60, 62.

Vic., dead, (N.H.S., C.F.N.) Comox, Deep Bay, (C.F.N.) Clayoquot Sd., (Spreadborough and C.F.N.) Several living, at more than two feet below the surface. Low water.

Well figured by Stearns in "Fisheries and Fish Industries of U. S.," by Goode, G. B., Washington, 1884.

Family MYIDÆ

Genus MYA L.

M. truncata L.

Vic., (N.H.S., C.F.N.) several dead. Salt Spring I., living, (C. F. N.) Comox and Clayoquot, (C.F.N.) Discovery Passage, Johnstone St., Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.) Between tides. In boulder-clay, Vic., (C.F.N., &c.)

M. arenaria L.

Cadboro' Bay, Vic., (G.W.T., C.F.N.) St. of Georgia to Comox, (C.F.N.) Clayoquot Sd., (C.F.N.)

Not on the earliest lists, and supposed by some to have been introduced from the Atlantic together with oyster spat. It has frequently been found as a fossil in the boulder-clay at Victoria and other places.

Genus Cryptomya Conrad

C. Californica Conr. 23, 7.

Vic., (G.W.T., C.F.N.) to Comox, (W.H., C.F.N.) Clayoquot Sd., (C.F.N.) Q.C.I., (G.M.D.) At low water.

Genus SCHIZOTHERUS Conrad

S. Nuttalli Conr. 23, 26.

Generally distributed. One of the principal edible molluscs. Frequently shelters the crab *Pinnotheres faba*, Dana.

Genus DARINA

D. declivis Cpr. 13, 17.

Near Victoria, (Lord.)

Family CORBULIDÆ

Genus SPHENIA Turton

S. ovoidea Cpr. 13, 21.

Puget Sound, (Dr. Kennerley.)

Genus CUSPIDARIA Nardo

C. (Cardiomya) pectinata Cpr. 13, 21.

Vic., rare, (C.F.N.) Dep. Bay, (G.W.T., C.F.N.) St. of Georgia, Discovery Passage, Johnstone St., Q.Ch.Sd., and Q.C.I., (G.M.D.) Comox, (W.H.) At 15 to 70 fms. (*Neera pectinata*.)

Family PANDORIDÆ

Genus PANDORA Hwass

Sub-genus CLIDIOPHORA Cpr.

C. punctata Conr. 23, 15.

West Coast of V. I., (Wilkinson) Clayoquot Sd., a few living and many dead specimens, (C.F.N.) In clean sand, 3 to 10 fms.

Subgenus KENNERLIA Cpr.

K. grandis Dall. 35.

Vic, (N.H.S., G.W.T., C.F.N.) Discovery Passage, Johnstone St., (G.M.D.) Apparently collected first in B. C. by J. Richardson, 1872. 10 to 20 fms. and upwards.

K. filosa Cpr. 13, 15.

Vic., not rare, (N.H.S., G.W.T., C.F.N.) St. of Georgia, Quatsino Sd., and Q.C.I., (G.M.D.) Comox and Clayoquot Sd., (C.F.N.)

Family ANATINIDÆ

Genus THRACIA Leach

T. curta Conr. 23, 7.

Vic., (G.W.T., C.F.N.) rare. Deep Bay, Comox, (C.F.N.) Clayoquot Sd., (C.F.N.) Quatsino Sd. and Q.C.I., (G.M.D.) Dead specimens mostly. 10 to 40 fms.

T. Beringi Dall. M. S.

Vic, a dead valve, (G.W.T.) examined and named by W.H.D.

Genus ENTODESMA Philippi

E. saxicola Baird. 2.

Vic. and Salt Spring I., (G.W.T., C.F.N.) Comox, (W.H., C.F.N.) Clayoquot Sd., (C.F.N.) Port Neville, Johnstone St., Beaver Harbour and Q.C.I., (G.M.D.) Low tide. In crevices of rocks. Also with *Mytilus edulis* on floating stages.

Genus MYTILIMERIA Conrad

M. Nuttalli Conr. 23, 7.

Vic., three living and two dead specimens, (C.F.N.) Clayoquot Sd., a few dead, (C.F.N.) Comox, dead but very large, (W.H.) Q.C.I., (G.M.D.) Low water to 20 fms. Usually cracks when drying.

Family SOLENIDÆ

Genus SOLEN Linn

S. sicarius Gld. 60, 62.

Vic., living, (N.H.S., C.F.N., G.W.T.) Comox, and Clayoquot Sd., (C.F.N.)

Genus SILIQUA Megerle

S. patula Dixon. 50. (*Machera patula*)

Vic., dead, (G.W.T., C.F.N.) One jr. living, Vic., (C.F.N.) Clayoquot Sd., living, (C.F.N.) Q.C.I., (G.M.D.)

Family TELLINIDÆ

Genus PSAMMOBIA Lamarck

P. rubroradiata Nutt. 23, 7.

Vic., dead, (C.F.N.) Comox, (Cowley, C.F.N., W.H.) Clayoquot Sd., (C.F.N.) Q.C.I., (G.M.D.) At low water, rare living. Barclay Sd., (Prof. Macoun.)

Genus MACOMA Leach

M. secta Conr. 23, 7.

Vic., Salt Spring I., Comox, Dep. Bay, Clayoquot Sd., (C.F.N. and others) Q.C.I., (G.M.D.) Near low water.

M. nasuta Conr. 23, 7.

Generally distributed.

M. inquinata Desh. 48a.

Vic., Salt Spring I., Dep. Bay, Comox, Clayoquot Sd., Sooke, Quatsino Sd., and Q.C.I., (various collectors.) Near low water.

M. calcarea Chemn.

Vic., dead, (G.W.T., C.F.N.) Quatsino Sd., and Q.C.I., (G.M.D.) 20 to 111 fms. Also fossil in boulder-clay, (C.F.N.)

M. goldiformis Cpr. 13, 21.

Dep. Bay, (G.W.T.) Clayoquot Sd., (C.F.N.) Comox, (W.H., C.F.N.) Quatsino Sd., (G.M.D.)

M. inconspicua Brod. and Sby. 3.

Generally distributed, Q.C.I., (G.M.D.) In sandy bays, at and near low water.

M. expansa Cpr. 13, 21.

Puget Sound, (Kennerley).

M. sp. nov.

Clayoquot Sd., (C.F.N.) Near low water mark.

Mr. Dall states that he has this shell from Port Etches and Sitka.

Genus TELLINA Linn

T. Gouldii Cpr. 13, 19.

Young specimens, Comox, (C.F.N.) Mr. Dall states that these may be the young of *T. inflatula*, Dall. Dredged in 10 fms.

T. Bodegensis Hinds. 67, 68.

Clayoquot Sd., at low tide, several living specimens, (C.F.N.) North and north-west coast of Vancouver Island, (G.M.D.)

T. (Angulus) variegata Cpr. 13, 16.

Quatsino Sd., (G.M.D.)

T. (Angulus) modesta Cpr. 13, 21.

Vic., (G.W.T., C.F.N.) Comox and Clayoquot Sd., (C.F.N.) St of Georgia, (G.M.D.) Low water to ten fms.

T. (Angulus) obtusa Cpr. 13, 21.

Discovery Passage, Q.Ch.Sd., Quatsino Sd., (G.M.D.)

T. (Mera) salmonea Cpr. 13, 16.

Clayoquot Sd., (C.F.N.) Quatsino Sd., Q.Ch.Sd., Q.C.I., (G.M.D.) Low water to 10 fms. and upwards.

Genus ŒDALINA Cpr.

Œ. subdiaphana Cpr. 13, 19.

One living specimen, at low water, Clayoquot Sd., (C.F.N.) [W.H.D.]

Genus SEMELE Schumacher

S. rubropicta Dall. 30.

Vic., dead, (G.W.T., C.F.N.) Dep. Bay. (G.W.T., C.F.N.) Clayoquot Sd., (C.F.N.) In 20 fms. "The type of *S. rubrolineata*, Conr, was lost; this is not the shell latterly known by that name." [W.H.D.]

Genus CUMINGIA Sowerby

C. Californica Conr. 23.

Barelay Sound, near Alberni, one specimen, (Prof. Macoun.)

Family MACTRIDÆ

Genus MACTRA Linn

M. (Standella) planulata Conr. 7, 23.

Dep. Bay, (G.W.T.) Clayoquot Sd., (C.F.N.) Comox, (W.H.) Low water to 20 fms. [W.H.D.]

M. (Standella) falcata Gld. 52, 54.

Dead, one large specimen and valves. Vic., (C.F.N.) Comox, (W.H., C.F.N.) Q.C.I., (G.M.D.) [W.H.D.] Dead specimens on beach, and dredged in 15 fms.

Family VENERIDÆ

Genus PSEPHIS Cpr.

P. tantilla Gld. 62.

Vic., (Lord, G.W.T., C.F.N.) Gordon Head, Saanich Arm, Comox, and Clayoquot Sd., (C.F.N.) At low water, in the mud under large stones.

P. Lordi Baird. 2.

Whole coast to Q.C.I., (G.M.D.) Plentiful at Clayoquot, (C.F.N.) Low water to 25 fms., in sandy mud.

Genus CLEMENTIA

C. subdiaphana Cpr 13, 21.

Vic., living, large, (N.H.S.) Junr. living, and large dead, (G.W.T., C.F.N.) Dep. Bay, Deep Bay, Comox, and Clayoquot Sd., (C.F.N., W.H.) Quatsino Sd., and Q.C.I., (G.M.D.) In 15 to 40 fms. and upwards. Well figured by Dall in paper on "Albatross Mollusca." (42.)

Genus VENUS Linn

V. Kennerleyi Rve. 87. 13, 21.

Vic., living, (N.H.S.) dead, (G.W.T., C.F.N.) Dep. Bay, (C.F.N.) Q.Ch. Sd., and Q.C.I., (G.M.D.) 10 to 30 fms

Genus TAPES Megerle

T. staminea Conr., and varieties. 23, 7.

An edible mollusc. Between tides, from Vic. to Q.C.I., (G.M.D.)

T. tenerrima Cpr. 8, 13.

Vic., dead, (G.W.T., C.F.N.) Cadboro Bay, V.I., living, (G.W.T.) Dep. Bay, and Clayoquot Sd., (C.F.N.) Low water, sand and sandy mud. Valves plentiful at Clayoquot Sd.

Genus SAXIDOMUS Conrad

S. squalidus Desh. 49.

An edible mollusc. Common everywhere, to Q.C.I. Between tides.

Family PETRICOLIDÆ.

Genus PETRICOLA Lamarck

P. carditoides Conr. 23, 7.

Vic., (J.R.) Clayoquot Sd., (C.F.N.) young. [W.H.D.]

Family CARDIIDÆ

Genus CARDIUM Linn

C. Nuttalli Conr. 23, 7.

Common everywhere to Q.C.I., (G.M.D.) Between tides.

C. blandum Gld. 60, 62.

Vic., abundant. Dep. Bay, Comox, Clayoquot Sd., (C.F.N.) Q.Ch.Sd., Q.C.I., G.M.D. 10 to 40 fms.

As Gould (62) says, its form varies from circular to transversely oval.

C. centifilosum Cpr. 13. *Fulvia modesta* and *C. Richardsoni*, 106.

Vic., and Dep. Bay, (G.W.T.) Between Race Rocks and Victoria Harbour, (J. R.)

Genus SERRIPES Beck

S. Greenlandicus Chemn. 22.

Vic., dead, (G.W.T.) Dep. Bay, (G.W.T., C.F.N.) Deep Bay, near Comox,¹ living, (C.F.N.) [W.H.D.] In 20 fms. Fossil, in boulder-clay in several localities, (C.F.N.)

S. Laperousii Deshayes. 46, 47.

One living specimen taken by J. Richardson.

Family CARDITIDÆ

Genus VENERICARDIA Lamarck

V. borealis Conr. 24, 58, 100.

St. of Georgia, Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.) See No. 100, plate XVI., fig. 8. At page 217 in the same paper *V. borealis* is compared with the following species.

V. ventricosa Gld. 52, 54, 100.

Whole coast to Q.C.I., (G.M.D.) 15 to 111 fms.

See Stearns, (No. 100) plate XVI., figs. 5 and 6.

Genus CARDITAMERA Conr., 1838. 100.

(LAZARIA Gray, 1853.)

C. subquadrata Cpr. 13, 18, 100.

On kelp, living, Barclay sound., (Cowley). In Indian collection from West coast of V. I., (Prov. Mus.)

Family LUCINIDÆ

Genus LUCINA Brug

L. tenuisculpta Cpr. 13, 21.

Vic., (G.W.T., C.F.N.) Dep. Bay, (G.W.T., C.F.N.) Comox, very large, (C.F.N., W.H.) Clayoquot Sd., (C.F.N.) St. of Georgia, Quatsino Sd., and Q.C.I., (G.M.D.) 15 to 30 fms. and upwards. Mud, and sandy mud.

L. acutilineata Conrad. 25, 100.

Vic., living, (G.W.T., C.F.N.) Clayoquot Sd., perfect, dead specimens abundant at low water, (C.F.N.) Quatsino Sd. and Q.C.I., (G.M.D.) 8 to 111 fms. This is the shell usually listed as *L. filosa*, Stimpson. (Shells of New England, 1851, p. 17.) [W.H.D.] Stearns, *loc. cit.*, gives figures of *L. filosa*, pl. XVII., figs. 5 and 6.

L. (Cryptodon) sericeata Cpr. 13, 21.

Esquimalt, in mud, plentiful, (C.F.N.) Dep. Bay, (G.W.T., C.F.N.) Comox, and Clayoquot Sd., (C.F.N.) Quatsino Sd., and Q.C.I., (G.M.D.)

L. (Cryptodon) flexuosa Mont.

Dep. Bay, (G.W.T.) St. of Georgia, Quatsino Sd., and Q.C.I., (G.M.D.)

Family DIPLODONTIDÆ

Genus DIPLODONTA Brown

D. orbella Gld. 62.

Dead, Dep. Bay and Vesuvius Bay, (G.W.T., C.F.N.) Comox, (W. H., C.F.N.) Malaspina Inlet, North or North-west Coast of V.I., and Q.C.I., (G.M.D.) Low water to 20 fms. Mud.

Family KELLIADÆ

Genus KELLIA Turton

K. Laperousii Desh. 13.

Vic., Dep. Bay, (G.W.T., C.F.N.) Comox, large and thick, (W.H., C.F.N.) Clayoquot Sd., (C.F.N.) Malaspina Inlet, (G.M.D.) Usually hidden in mud in dead shells. Low water to 20 fms. and upwards.

K. Laperousii, var. *Chironii*, Cpr. 13, 19.

St. of Georgia and Johnstone St. At low water, living, (G.M.D.)

K. suborbicularis Mont.

Vic., (G.W.T.) Q.C.I., (G.M.D.)

Genus LASEA Leach

L. rubra Mont.

Vic., (G.W.T.) On kelp.

Genus TELLIMYA Brown

T. tumida Cpr. 13, 21.

Vic., G.W.T., C.F.N.) Oak Bay, (Prof. Macoun). Gordon Head, V.I. Clayoquot and Comox, (C.F.N.) Q.C.I., (G.M.D.) Low water to 20 fms. Sand or mud.

Genus PYTHINA

P. rugifera Cpr. 13, 21.

Puget Sound, (Kennerley.)

Genus LEPTON Turton

L. rude Whiteaves. 104.

Vic., (Dr. Hasell, C.F.N.) Comox, (W.H.) Q.C.I., (G.M.D.) Attached, when living to abdominal segments of *Gebia pugettensis*, the common "mud prawn." Referred to by Stimpson in Bost. Journ. Nat. Hist., Vol. VI—No. IV., 1857, p. 488.

Family ASTARTIDÆ

Genus ASTARTE J. Sowerby

A. Esquimalti Baird. 2, 93.

Vic., rare, (C.F.N.) Dep. Bay, (G.W.T., C.F.N.) St. of Georgia, Discovery Passage, Johnstone St., Q.Ch.Sd. and Q.C.I., (G.M.D.) "Closely related to *A. (Rhectocyma) mirabilis*, Dall. [E. A. Smith, 93.]

A. compacta Cpr. 13, 21, 93.

Puget Sound, (Kennerley). A small species, apparently not taken recently.

A. undata Gld. var. of 53, 62, 93.

Vic., (G.W.T., N.H.S., C.F.N.) Dep. bay, (C.F.N.) Q.C.I., (G.M.D.) St. of Georgia, Discovery Passage, and Johnstone St., (G.M.D.) 15 to 30 fms. Sandy mud.

Mr. Whiteaves, (Trans. R. S. Can., Sec. 4, Vol. IV., 1886), states that Dr. Dawson's specimens from the St. of Georgia, can scarcely be separated from examples of a variety of *A. undata*, dredged in the Atlantic, off Prince Edward's Island.

Genus MIODON Cpr.

M. prolongatus Cpr. 13, 16, 100.

Vic., (C.F.N.) Vesuvius Bay, (G.W.T.) Dep. Bay, (C.F.N.) Q.C.I., (G.M.D.) Between tides to 20 fms.

See Stearns, (100) pl. XVI., figs. 7 and 9, and p. 217. Also found by Dall in Alaska.

Family MYTILIDÆ

Genus MYTILUS Linn

M. Californianus Conr. 23, 7.

Generally distributed to Q.C.I., (G.M.D.) Very large on the West coast. Between tides.

M. edulis Linn.

Generally distributed to Q.C.I., (G.M.D.)

Genus MODIOLA Lamarck

M. Taylora Dall, M. S.

Vic., (G.W.T., C.F.N.) First collected by the Rev. G. W. Taylor. On coralline, in tide pools.

M. recta Conr., var. *flabellata* Gld. 23, 7, 52, 54.

Vic., (Dall.) Ganges Harbour, Salt Spring I., living, (C.F.N.) Clayoquot Sd., (C.F.N.) Comox, dead, not uncommon, (W.H.) Between tides, in sandy mud.

M. modiolus Linn.

Generally distributed to Q.C.I., (G.M.D.) Low water, in sandy mud.

Subgenus ADULA H. and A. Adams

A. stylina Cpr. 13, 16.

Vic., (Lord, C.F.N.) Boring into claystone, attached by a byssus to its burrow.

Genus MODIOLARIA Beck

M. laevigata Gray. 64.

Vic., not uncommon, (N.H.S., C.F.N., G.W.T.) Dep. Bay, (G.W.T., C.F.N.) Port Neville, near Johnstone St. At low water, living, (G.M.D.)

M. nigra Gray. 64.

Vic. and Dep. Bay, (G.W.T., C.F.N.) Comox, (C.F.N.) St. of Georgia, Discovery Passage and Q.Ch.Sd., (G.M.D.)

Genus CRENELLA Brown

C. decussata Mont.

Generally distributed to Q.C.I., (G.M.D.)

Family ARCIDÆ

Genus AXINÆA Poli

A. subobsoleta Cpr. 13, 16.

Clayoquot Sd., living, (C.F.N.) Q.Ch.Sd., (G.M.D.) Q.C.I., (G.M.D. and J. Deans). Low water to 30 fms.

Family NUCULIDÆ

Genus NUCULA Lamarck

N. tenuis Mont., var. *lucida* Gld. 13.

Generally distributed to Q.C.I., (G.M.D.)

N. (Acila) castrensis Hinds. 67, 68.

Vic., (N.H.S., G.W.T., C.F.N.) Dep. Bay, very abundant, (G.W.T., C.F.N.) Quatsino Sd., and Q.C.I., (G.M.D.) About 10 to 20 fms., in mud.

Family LEDIDÆ

Genus LEDA Schumacher

L. minuta O. Fab 55.

Vic., Dep. Bay, (G.W.T., C.F.N.) Comox, (C.F.N.) Quatsino Sd., and Q.C.I., (G.M.D.)

L. fossa Baird. 2.

Vic., (Lord). Discovery Passage, (G.M.D.)

L. acuta Conr.

Rare, Quatsino Sd., and Q.C.I., (G.M.D.)

Genus YOLDIA Mörch

Y. lanceolata J. Sby. 98.

Vic., (C.F.N., N.H.S.) Dep. Bay, (G.W.T., C.F.N.) Near Comox, very large, (W.H., C.F.N.) Quatsino Sd., and Q.C.I., (G.M.D.)

Y. amygdala Cpr. 13, 102.

Vic., (C.F.N.) rare. Dep. Bay, (G.W.T.) Comox, (C.F.N.)

Y. limatula Say. 90.

Dep. Bay, (G.W.T.)

Y. thracieformis Storer. 101.

Quatsino Sd., (G.M.D.)

Y. Vancouverensis E. A. Smith. 92.

? Near Vic., (J. Vidler).

Family AVICULIDÆ

Genus BRYOPHILA Cpr.

B. setosa Cpr. 13, 14.

Virago Sound, Q.C.I., (G.M.D.)

Family PECTINIDÆ

Genus LIMATULA S. Wood

L. subauriculata Mont.

Johnstone St., and Q.Ch.Sd., (G.M.D.)

Genus PECTEN Linn

P. hastatus Sby. 96.

Vic., Dep. Bay, Comox, Clayoquot Sd., Quatsino Sd., Q.C.I. Low water to 40 fms.

P. hastatus var. *rubidus* Hinds. 67, 68.

Not so plentiful as the last, but widely distributed.

P. Alaskensis Dall. 32.

In a glacial shell deposit, Pt. Holmes, Comox, (W.H., C.F.N.) [W.H.D.]

See too, 41, figs. 7, 7a. of pl. V.

Pecten (Pseudamysium) Vancouverensis Whiteaves. 106.

Forward Inlet, Quatsino Sd., in 10 to 20 fms., mud, 1885, (G.M.D.) One living specimen. A very small shell, measuring in height 7.50 mm.; length, 7.75 mm. Also collected in Dep. Bay, (G.W.T., C.F.N.) (*P. Alaskensis* Whiteaves, non Dall. 105.)

Genus HINNITES Defrance

H. giganteus Gray. 63.

Vic., Esquimalt; Comox, (W.H.) Clayoquot Sd., (C.F.N.) Malaspina Inlet, Fort Rupert, Quatsino Sd., and Q.C.I., (G.M.D.) Attached to rocks and boulders at and below low water mark.

Genus AMUSIUM Schumacher

A. caurinum Gld. 62.

Race Rocks, near Vic, (J. Vidler, G.W.T.) Baynes Sd., (J.R., C.F.N.) Comox, (W.H.)

A young valve of this species is figured by Dall, Mollusca of the Blake Expedition, also in 41, pl. V., fig. 4.

Family OSTREIDÆ

Genus OSTREA Linn

O. lurida Cpr. 13, 19.

Victoria Arm and Kuper I., (G.W.T.) Sooke, Oyster Bay, Clayoquot and Baynes Sd., (C.F.N.) Malaspina Inlet and Blunden Harbour, Q.Ch. Sd., (G.M.D.) The last mentioned is the most northerly locality yet recorded for oysters on the coast of British Columbia, (Whiteaves).

O. Virginica Gmelin.

Reported living, but scarce, in Victoria Arm, where it was introduced about ten years ago.

Family ANOMIADÆ

Genus PLACUANOMIA Broderip

P. macroschisma Desh. 46.

Generally distributed, reaching Q.C.I., (G.M.D.) Low water to 40 fms. and upwards.

CLASS SCAPHOPODA.

Family DENTALIIDÆ

Genus DENTALIUM L.

D. pretiosum Nuttall. 13, 74. *D. Indianorum* Cpr.

Dead on beach Clayoquot Sd., (C.F.N.) Reported at Quatsino Sd to Dr. Dawson. Dead, Q.C.I., (G.M.D.)

Lord, No. 74, describes the Indian method of collecting when used as money. The Hudson's Bay Company state that they are no longer of any value for trading with Indians.

D. rectius Cpr. 13, 21.

Collected in B. C. by J. Richardson.

Genus CADULUS Philippi

C. aberrans Whiteaves. 105.

Quatsino Sd., (G.M.D.) Also collected at Catalina Island, California, by Dr. J. G. Cooper. [W.H.D.]

CLASS GASTROPODA.

Family BULLIDÆ

Genus HAMINEA Leach

H. hydatis L.

Victoria Arm, (G.W.T.) Esquimalt Harbour, (N.H.S.) Ganges Harbour, Comox, Clayoquot Sd., Dep Bay, (C.F.N.)

Family SCAPHANDRIDÆ

Genus CYLICHNA Lovén

C. attonsa Cpr. 13, 21.

Dep. Bay, (G.W.T.) St. of Georgia, Quatsino Sd. and Q.C.I., (G.M.D.) Comox, (W.H., C.F.N.) Clayoquot Sd. (C.F.N.) [W.H.D.]

Genus Diaphana Brown

D. debilis Gld. 53, 62.

On kelp, Vic., (G.W.T.)

Family ACTÆONIDÆ

Genus ACTÆON Montfort

Section RICTAXIS Dall

Actæon (Rictaxis) punctocalatus Cpr. 13, 19.

Dead on beach, north end of V.I., (Anderson). On east side of Denman Island, near Comox, (W.H.)

Family TORNATINIDÆ

Genus TORNATINA A. Adams

T. inculta Gld. 61.

Departure Bay, (G.W.T.)

T. eximia Baird. 2.

Vic. and Dep. Bay, (G.W.T., C.F.N.) Ganges Harbour, Clayoquot Sd., Comox, (C.F.N.) St. of Georgia, Discovery Passage, Q.Ch.Sd., and Q.C.I. (G.M.D.)

T. harpa Dall. 30.

Clayoquot Sd., (C.F.N.) Five fathoms sand. New to the district. [W.H.D.]

T. cerealis Gld. 54.

Clayoquot Sd., (C.F.N.) Comox, (W.H.) In sand, 5 to 20 fms. [W.H.D.]

Family SIPHONARIIDÆ

Genus SIPHONARIA Sby.

S. Thersites Cpr. 13, 16.

Vic., (G.W.T., C.F.N.) Clayoquot Sd., (C.F.N.) Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.) Between tides, hardly to be distinguished from the rocks to which they cling. Also found on Bering Island by the Vega Arctic Expedition, (see 1a.)

Family MOPALIIDÆ

Genus MOPALIA Gray

* *M. muscosa* Gld. 62, 36, 13.

Generally distributed, Vic., Clayoquot Sd., (C.F.N.&c.) Between tides, "Jugal sinus, seen from within, is very small and narrow." [H.A.P.]

M. muscosa, var. *Hindsii* Gray. 66, 36, 13.

Q.C.I., (G.M.D.) A dark smooth form.

* *M. muscosa*, sub-species *lignosa* Gld. 62, 36, 13.

Vic., Clayoquot Sd., Salt Spring I., Nanaimo, Comox, &c., (C.F.N., &c.) St. of Georgia, Goletas Channel, Q.Ch.Sd., and Q.C.I., (G.M.D.) Between tides, common.

* *M. ciliata* Sowerby. 95, 36, 13.

Vic., Clayoquot Sd., Salt Spring I., Nanaimo, Comox, &c., (C.F.N., &c.) "Jugal sinus, seen from within, broad and rounded. Ribs of head valve weak." [H.A.P.]

M. ciliata, var. *Wosnessenskii* Midd. 79, 36, 13.

Vic., (G.W.T., C.F.N.) Salt Spring I., Clayoquot Sd., Dep. Bay, Comox, &c., (C.F.N.) St. of Georgia, Goletas Channel, Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.)

* *M. imporcata* Cpr. 13, 21, 36.

Vic., (G.W.T., C.F.N.) Ganges Harbour and Comox, (C.F.N.) Johnstone St., (G.M.D.) "High angled, with the back edge of each valve serrated, head valve with very strong ribs." [H.A.P.] 10 to 25 fms.

* These have been examined by Mr. H. A. Pilsbry, of the Academy of Natural Science, Philadelphia.

* *M. sinuata* Cpr. 13, 21, 36.

Vic., (G.W.T., C.F.N.) "High angled, back edge of valves not serrated, head valves with strong ribs. Surface reticulated by two sets of curved riblets. [H.A.P.]

Family CRYPTOCHITONIDÆ

Genus CRYPTOCHITON Midd. and Gray

* *C. Stelleri* Midd. 78, 36.

Whole coast to Q.C.I. At and near low water

Genus KATHERINA Gray

* *K. tunicata* Wood. 107, 36.

Whole coast to Q.C.I., (G.M.D.) Between tide marks. A favorite delicacy with the Indians, and occasionally to be seen in the market.

Family LEPTOCHITONIDÆ

Genus LEPTOCHITON Gray

* *L. cancellatus* Sby. 95, 36.

Vic., (G.W.T., C.F.N.) Dep. Bay, and Clayoquot Sd., (C.F.N.) Q.Ch.Sd. (G.M.D.) Under stones at low water and dredged in 20 fms.

Family ISCHNOCHITONIDÆ

Genus TRACHYDERMON Cpr.

T. dentiens Gld. 62, 36.

Vic., (G.W.T., C.F.N.) Clayoquot Sd., (C.F.N.) In tide pools.

* *T. flectens* Cpr. 13, 21, 36.

Vic. and Dep. Bay, (G.W.T.) Small, rose coloured. Dredged in 10 fms. and upwards.

Genus TONICELLA Cpr.

* *T. lineata* Wood. 107, 36.

Whole coast to Q.C.I., (G.M.D.) In tide pools.

T. marmorea O. Fab. 55, 36.

Q.C.I., two specimens, (G.M.D.)

T. submarmorea Midd. 78, 36.

Vic. and Vesuvius Bay, Salt Spring I., (G.W.T.) South end of Galiano Island, (C.F.N.) Very rare. Taken on rocks between tides.

Genus ISCHNOCHITON Cpr.

* *I. interstinctus* Gld. 60, 62, 36.

Vic., common, to Q.C.I., (G.M.D.) Dredged in 10 to 40 fms.

* *I. trijida* Cpr. 13, 21, 36.

Q.Ch.Sd., one living, (G.M.D.) Q.C.I., one specimen, (G.M.D.)

* *I. Mertensii* Midd. 79, 36.

Vic., Dep. Bay, Comox, Clayoquot Sd. to Q.C.I., (G.M.D.)

* *I. reteporosus* Cpr. 13, 21.

Vic., (C.F.N.)

* *I. reteporosus*, var. *punctatus* Whiteaves. 105.

Discovery Passage, (G.M.D.) "A feebly marked variety, distinguished by its colour." [H.A.P.]

Genus CHÆTOPLEURA Shuttleworth

C. Hartwegii Cpr. 7, 13, 36.

Vic., (G.W.T.) Q.C.I., (G.M.D.)

C. Hartwegii, var. *Nuttallii* Cpr. 7, 13, 36.

Vancouver District, (Swan).

Family ACANTHOPLEURIDÆ

Genus NUTTALLINA Cpr.

Nuttallina scabra Rve. 86, 13, 36.

Puget Sound, (Dr. Kennerley). "Exposed headlands, at and above high water mark, in crevices of rocks. Vancouver District," Dall, 36.

Family ACMÆIDÆ

Genus ACMÆA Esch., 52, 36.

A. mitra Esch. 52, 36, 29.

Abundant in rocky tide pools, Vic. Reaches to Q.C.I., (G.M.D., J. Deans) Usually coated with nodules of nullipore, pink or green Sometimes harbours a commensal worm, a species of *Lepidonotus*, (C.F.N.)

A. testudinalis Muller. 81. var. *patina* Esch. 52, 36.

Between tides. "Specimens of *patina* from Sitka and the Aleutian Islands are indistinguishable from specimens of the same size from Eastport, Maine," Dall, 36.

A. testudinalis, var. *alveus* Dall. 36.

Narrowed by living on a frond of seaweed or *Zostera*. Vic., Cadboro' Bay, (G.W.T.)

A. testudinalis, var. *scutum* Esch. 52, 36, 29.

Between tides.

A. pelta Esch. 52, 36, 29.

Between tide marks, Vic. to Q.C.I.

A. persona Esch. 52, 36, 29.

Between and sometimes above tide marks, (Dall, 36). Vic. to Q.C.I.

The rough form (*A. digitalis* Esch., 52.) is more common than the smooth.

A. instabilis Gld. 60, 36, 29.

Clayoquot Sd., (C.F.N.) Vic., and Barclay Sd., (Cowley). Rare at Vic.; abundant, dead, on the West coast of V.I. Lives on the stems of *Macrocystis*, the giant kelp. Flattened laterally.

Family LEPETIDÆ

Genus CRYPTOBRANCHIA Dall ex Midd.

C. concentrica Dall. 78, 36, 28.

Vic., (G.W.T., C.F.N., N.H.S.) Comox, Clayoquot Sd., (C.F.N.) Q.Ch. Sd., Quatsino Sd., and Q.C.I., (G.M.D.) Low water to 80 fms. Sculpture usually faint.

Family FISSURELLIDÆ

Genus FISSURIDEA Swainson, 1840.

F. aspera Esch. 52.

Vic., (G.W.T., C.F.N.) Salt Spring I., and Clayoquot Sd., (C.F.N.) St. of Georgia, Johnstone and Broughton Sts., Goletas Channel, North-west coast of V.I., and Q.C.I., (G.M.D.) At or near low water mark. Frequently shelters a commensal parasitic worm, *Lepidonotus Lordi*, Baird, ('four out of six,' Lord, 74, Vol. II., p. 10.)

Genus PUNCTURELLA Lowe

P. Cooperi Cpr. 12, 13.

Dep. Bay, (G.W.T.) In 20 fms.

P. galeata Gld. 60, 62.

Vic., (G.W.T., N.H.S., C.F.N.) Dep. Bay, Comox and Clayoquot Sd., (C.F.N.) Discovery Passage, Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.) 8 to 25 fms.

P. cucullata Gld. 60, 62.

Vic. and Dep. Bay, (G.W.T., C.F.N.) Clayoquot Sd., (C.F.N.) At the same stations as the last species, (G.M.D.) Low tide to 30 fms. Often found to contain a commensal worm, a species of *Lepidonotus*, (C.F.N.)

Genus MEGATEBENNUS Pilsbry

M. bimaculatus Dall. 30.

In roots of *Macrocystis*, living, Clayoquot Sd., and on beach, dead, (C.F.N.) Q.C.I., dead, (G.M.D.) Hole enormous in proportion to size of shell.

Genus EMARGINULA Lamarck

E. crassa J. Sby.

With starfishes, dredged by Dr. Dawson in Q.C.I. *Vide* Whiteaves, 107.

Family HALIOTIDÆ

Genus Haliotis Linn

H. Kamtschatkana Jonas. 70.

Clayoquot Sd., dead, (C.F.N.) Port Neville on the Mainland, and on the north and north-west coast of V.I., and Q.C.I., (G.M.D.) Just below low water mark.

Family TURBINIDÆ

Genus LEPTOTHYRA Cpr.

L. bacula Cpr. 12, 13.

Vic., and Dep. Bay, (G.W.T.)

L. Carpenteri Pilsbry. 83. (*L. sanguinea* (Linn) Cpr.)

Vic., dead, (G.W.T.) ; a few living, in roots of kelp, (C.F.N.) Johnstone and Broughton Sts., Goletas Channel, Q.Ch.Sd. and Q.C.I., (G.M.D.)

Genus PACHYPOMA Gray

P. inæquale Martyn. 75, 6.

Barclay Sd., (Cowley, Skinner, etc.) Clayoquot Sd., (C.F.N.) Quatsino Sd., and Q.C.I., (G.M.D.)

Several illustrations of this species will be found in No. 6, Pls. XIX. and XXIII.

Family TROCHIDÆ

Genus CHLOROSTOMA Swainson

C. funebre A. Ad. 1, 6.

Clayoquot Sd., (C.F.N.) North and north-west coast of V.I., and in Q.C.I., (G.M.D.) Near low water mark, and on fronds of *Macrocystis*. Illustrated in No. 6, pl. XXI., fig. 7.

Genus CALLIOSTOMA Swainson

C. annulatum Martyn. 75, 6.

Vic., not rare, (G.W.T., N.H.S., C.F.N.) Johnston St., and Q.C.I., (G.M.D.) Low water to 20 fms., rocks.

Figured in No. 6, pl. XXII., fig. 2.

C. canaliculatum Martyn. 75, 6.

Dredged two living specimens off Maculay Pt., Vic., (C.F.N.) Barclay Sd., (Cowley.) On fronds of *Macrocystis pyrifera*. Clayoquot Sd., (C.F.N.) Q.C.I., (G.M.D.)

Figured in No. 6 pl., XXII., fig. 6.

C. costatum Martyn. 75.

Very much commoner than the last two species. Vic., Dep. Bay to Comox, (C.F.N.) Johnstone St., Goletas Channel, Q.Ch.Sd., &c., to Q.C.I., (G.M.D.) Low water to 15 fms.

Figured in No. 6., pl. XXII., fig. 1.

Genus GIBBULA Risso

G. (Phorcus) pulligo Martyn. 75, 6.

Barclay Sd., (Cowley). Clayoquot Sd., (C.F.N.) Johnstone and Broughton Sts., Goletas Channel, Q.Ch.Sd., North and north-west coast of V.I., often on fronds and stems of *Macrocystis*, (G.M.D.)

Figured in No. 6.

Genus MARGARITA Leach

M. tirulata Cpr. 13, 21.

Vic., abundant. Clayoquot Sd., (C.F.N.) Discovery Passage, Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.) Low tide to 20 fms.

M. pupilla Gid. 13, 60, 62.

Vic., abundant. St. of Georgia, and Clayoquot Sd., (C.F.N.) Beaver Harbour, Q.Ch.Sd., Johnston St., Quatsino Sd., and Q.C.I., (G.M.D.) Between tide marks to 30 fms.

M. varicosa Mighels and Adams. 76.

Vic., (G.W.T., C.F.N.) Off Pender I., (C.F.N.) Rarer than the preceding forms. Found also on the coasts of New England, Greenland, and by the Vega Expedition on Bering Island.

M. helicina Mont.

Rare, Vic., (G.W.T., C.F.N.) St. of Georgia, (C.F.N.) Johnstone St., Q.Ch.Sd., and Q.C.I., (G.M.D.) Rare, near low water. Circumboreal.

Genus SOLARIELLA S. Wood

S. cidaris A. Adams. 13, 16.

Johnstone St., Q.Ch.Sd., Quatsino Sd., (G.M.D.)

A specimen from San Pedro Bay is figured in No. 6, pl. XXII., fig. 4.

A much larger specimen from Q.Ch.Sd., is figured by Mr. Whiteaves, No. 106, pl. I., fig. 2, and 2a.

S. peramabilis Cpr. 12, 13.

Dep. Bay, one dead, (G.W.T.) Q.Ch.Sd., six living, (G.M.D.) Neah Bay, Washington, (Swan).

Genus CANTHARIDUS Monfort

Subgenus HALISTYLUS Dall, 40.

C. (Halistylus) purpoipeus Dall. 12, 40, 6. (*Fenella pupoidea* Cpr.)

Clayoquot Sd., four living, (C.F.N.) [W.H.D.] One shell, Q.C.I., (G.M.D.)

Figured in No. 6, pl. XIX., fig. 2.

Family CALYPTRÆIDÆ

Genus CREPIDULA Lamarck

C. adunca Sby. 94.

Vic., plentiful. Clayoquot Sd., (C.F.N.) Quatsino Sd., and Q.C.I., (G.M.D.) Frequently found in tide pools adhering to living gasteropods such as *Euthria dira*, *Calliostoma costatum*, and *Phorcus pulligo*.

C. dorsata Brod. Var. *lingulata* Gld. 60, 62.

A dark variety, commonly found on living oysters; a white variety frequently dredged on stones and bivalves. Vic., (N.H.S., G.W.T., C.F.N.) Low tide, Malaspina Inlet, Q.Ch.Sd., (G.M.D.)

Crepidula navicelloides Nuttall. 23, 7.

A large variety, under large stones in tide pools. Vic., (G.W.T., C.F.N.) Ganges Harbour, Clayoquot Sd., &c., (C.F.N.) A smaller, white variety dredged, attached to dead gasteropods. Vic., Dep. Bay, &c., (G.W.T., N.H.S., C.F.N.) Q.Ch.Sd., Q.C.I., (G.M.D.) Sometimes upwards of one inch and a half in length.

Genus GALERUS (HUMPH.) Gray

G. mammillaris Brod. 4, 5.

Dredged on stones and dead shells, Vic., and most stations to Q.C.I., (G.M.D.) Sometimes one inch and a quarter in diameter.

Family AMALTHEIDÆ

Genus AMALTHEA Schum. (Hipponyx Defr.)

A. cranioides Cpr. 13, 16.

Vic., one living, (G.W.T.) Clayoquot Sd., (C.F.N.) Q.C.I., (G.M.D.)
Low water.

Family VERMETIDÆ

Genus BIVONIA Gray

B. compacta Cpr. 13, 16.

On *Pachypoma gibberosum*. Vancouver District, (Swan.) Discovery
Passage on *Trophon tenuisculptus*, at Quatsino Sd., on *Pecten hastatus*,
(G.M.D.)

Family CÆCIDÆ

Genus CÆCUM Fleming

C. crebricinctum Cpr. 12, 13.

Dolomite Narrows, Q.C.I., (G.M.D.)

Family TURRITELLIDÆ

Genus TURRITELLA Lamarck

T. (Mesatia) reticulata Mighels and Adams. 76.

Esquimalt and Vic., (N.H.S., G.W.T., C.F.N.) Dep. Bay, (G.W.T.,
C.F.N.) St. of Georgia, Discovery Passage, Johnstone St., Q.Ch.Sd., Quat-
sino Sd., and Q.C.I., (G.M.D.) Fine sand and mud, 8 to 30 fms.

Family CERITHIIDÆ

Genus BITTIUM Leach

B. filiosum Gld. 60, 62.

Vic., Salt Spring I., Dep. Bay, &c., (G.W.T., C.F.N.) Comox District,
(C.F.N.) Malaspina Inlet, St. of Georgia, Discovery Passage, Johnstone
St., Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.) A large white variety at
Clayoquot Sd., (C.F.N.) At and near low tide mark.

B. armillatum Cpr. 13, 20.

In roots of kelp, Vic., (C.F.N.) "Probably a northern, slightly dwarfed
variety." [W.H.D.]

Family LITTORINIDÆ

Genus LITTORINA Férussac

L. scutulata Gld. 60, 62.

Whole coast to Q.C.I., (G.M.D.)

L. sitchana Phil. 82.

Whole coast to Q.C.I., (G.M.D.)

Genus ASSIMINEA Leach

A. subrotundata Cpr. 13, 16.

Vancouver District, (Swan.)

Genus LACUNA Turton

L. vincta Mont. and varieties.

Whole coast to Q.C.I., (G.M.D.)

L. variegata Cpr. 13, 16.

On *Zostera*, Vic., (G.W.T., C.F.N.)

L. solidula Loven.

Vic., (G.W.T., C.F.N.)

Family FOSSARIIDÆ

Genus ISAPIS Cpr.

I. fenestratus Cpr. 13, 16.

Clayoquot Sd., (C.F.N.) Vancouver District, (Swan.) 3 fms.

Family RISSOIDÆ

Genus RISSOA Fréminville

R. (Alvania) reticulata Cpr. 13, 16.

Vic., (G.W.T., C.F.N.) Vesuvius Bay, (G.W.T.) Q.C.I., (G.M.D.)
Low water.

R. (Alvania) filosa Cpr. 13, 16.

Vic., (G.W.T., C.F.N.) Low water.

R. (Alvania) castanea Moller. 80.

Clayoquot Sd., (C.F.N.) Low water to 5 fms. [W.H.D.]

R. compacta Cpr. 13, 21.

Vic., (G.W.T.) Q.C.I., (G.M.D.)

Genus HYDROBIA Hartm

H. Californica Tryon.

Victoria Arm and Ganges Harbour, (G.W.T.)

Genus BARLEEIA Clark

B. haliotiphila Cpr. 13, 19.

Vic., (G.W.T., C.F.N.) On corallines in tide pools.

B. subtennis C2r. 13, 19.

Q.Ch.Sd., (G.M.D.)

Family PLEUROTOMIDÆ

Genus PLEUROTOMA Lamarck

P. (Surcula) perversa Gabb. 57.

Vic., (N.H.S., G.W.T., C.F.N.) St. of Georgia, (J.R.) Q.Ch.Sd., (G.M.D.)
10 to 20 fms. Rare.

Genus DRILLA Gray

D. incisa Cpr. 13, 21.

Saanich Arm and Clayoquot Sd., living, (C.F.N.) Vesuvius Bay, dead,
(G.W.T., C.F.N.) Q.C.I., (G.M.D., and J. Deans.) Low water to 20 fms.

D. cancellata Cpr. 13, 21.

Vic., (N.H.S., G.W.T., C.F.N.) Dep. Bay, (G.W.T., C.F.N.) Comox,
(W.H., C.F.N.) 10 to 20 fms.

Genus MANGILIA Risso

M. levidensis Cpr. 13, 21.

Vic., (G.W.T., C.F.N.) Comox, (C.F.N.) [W.H.D.]

M. crebricostata Cpr. 13, 16.

Vic., (G.W.T., C.F.N.) [W.H.D.]

M. interfossa Cpr. 13, 16

Vancouver District, (Swan.)

M. sculpturata Dall. 39.

Vic. and Dep. Bay, (G.W.T., C.F.N.) Comox, (W.H. C.F.N.) Low
water. Clayoquot Sd., (C.F.N.) [W.H.D.] Q.C.I., (G.M.D.) To 20 fms.

Mangilia or *Cythara* Sp.

"This species is not in the West Coast Collection at the U. S. National
Museum. Probably new." [W.H.D.] Collected near Vic, (C.F.N.)

Genus BELA Gray

B. tabulata Cpr. 13, 16.

Vic., (G.W.T., C.F.N.) Q.Ch.Sd., (G.M.D.) 10 to 30 fms. [W.H.D.]

B. fidicula Gld. 60, 62.

Vic., (G.W.T., C.F.N.) Johnstone St., Q.Ch.Sd., and Q.C.I., (G.M.D.)
10 to 20 fms.

B. excurvata Cpr. 13, 21.

Puget Sound, (Kennerley).

B. violacea Mighels and Adams, var. 76.

Q.Ch.Sd., (G.M.D.) [W.H.D.]

B. Trevelyana Turton

Virago Sound, Q.C.I., (G.M.D.) [W.H.D.]

B. exarata Moller.

Vic., and Comox, (C.F.N.) [W.H.D.] 10 to 20 fms. Also found in Greenland, and Gaspé, E. Canada, (Whiteaves.)

Genus MITROMORPHA Adams

M. filosa Cpr. 13, 18.

Cumshewa Harbour, Q.C.I., (G.M.D.)

Figured in No. 6, pl. XIX, fig. 1.

M. effusa Cpr. 13, 16.

Vancouver District, (Swan.)

Family PYRAMIDELLIDÆ

Genus ODOSTOMIA Fleming.

O. satura Cpr. 13, 16.

Vic., (G.W.T., C.F.N.) [W.H.D.]

O. inflata Cpr. 13, 18.

Vancouver District, (Swan.)

O. tenuisculpta Cpr. 13, 16.

Vancouver District, (Swan.)

O. straminea Cpr.

Vic., (G.W.T., C.F.N.) Dep. Bay, (C.F.N.) Q.C.I., (G.M.D.) [W.H.D.]

O. stlkensis Dall.

St. of Georgia, (G.M.D.) Q.C.I., (G.M.D.)

O. nuciformis Cpr. 13, 16.

Vic., (C.F.N.)

O. gravis Gld. 62.

Vic., (CFN.) [W.H.D.]

Genus TURBONILLA Leach

T. chocolata Cpr. 12, 13.

Vic., (C.F.N.) Dep. Bay, (G.W.T., C.F.N.) Clayoquot Sd., (C.F.N.) [W.H.D.] 10 to 20 fms.

T. torquata Gld. 62.

Vic., (C.F.N.) Dep. Bay, (G.W.T., C.F.N.) [W.H.D.] 10 to 20 fms.

T. Lordi E. A. Smith. 92.

Dep. Bay, (G.W.T., C.F.N.) 20 fms.

T. tridentata Cpr. 13, 19.

Puget Sound, (Kennerley.)

Family EULIMIDÆ

Genus EULIMA Risso

E. micans Cpr. 13, 21.

Vic., (G.W.T., C.F.N.) Clayoquot Sd., (C.F.N.) Deep Bay, near Comox, large and plentiful, (C.F.N.) St. of Georgia, Discovery Passage, Johnstone St., Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.) 15 to 40 fms.

E. incurva Renieri. 88.

Vic., (G.W.T., C.F.N.) Clayoquot Sd., (C.F.N.) St. of Georgia, Discovery Passage, Goletas Channel, (G.M.D.) 15 to 30 fms.

Family SCALIDÆ

Genus SCALA Humphrey

S. Indianorum Cpr. 13, 21.

Dep. Bay, (G.W.T., C.F.N.) Baynes Sd., near Comox, (C.F.N.) Comox, (W.H.) Discovery Passage and Q.C.I., (G.M.D.)

Subgenus OPALIA Adams

Scala (Opalia) borealis Gould. 13, 16, 60.

Barclay Sd., (Cowley.) Clayoquot Sd., (C.F.N.) Q.C.I., (J. Deans.)

Scala (Opalia.) Sp.

Dep. Bay, (G.W.T.)

Family CERITHIOPSIDÆ

Genus CERITHIOPSIS F. and H.

C. munita Cpr. 13, 16.

Vic., (G.W.T., C.F.N.)

C. tuberculata Mont.

Vic., (G.W.T.) Q.C.I., (G.M.D.)

C. columna Cpr. 13, 16.

Vic., (G.W.T.)

Family CANCELLARIIDÆ

Genus CANCELLARIA Lamarck

C. modesta Cpr. 13, 16.

Vancouver District, (Swan.)

C. circumcincta Dall. 33.

Dep. Bay, (G.W.T.) Johnstone St., Q.Ch.Sd., (G.M.D.)

C. Unalashkensis Dall. 33.

Vic., (Fisher.) Clayoquot Sd., (C.F.N.) [W.H.D.]

Genus ADMETE Möller

A. Couthouyi Jay. 69, 39. *Admete viridula*.

Vic., (C.F.N.) Q.Ch.Sd., (G.M.D.) [W.H.D.]

Mr. Dall, (39) says that the earliest identifiable name of *A. viridula* of authors is *Cancellaria buccinoides*, *Couthouyi*, but this being pre-occupied, Dr. Jay, in 1839, named it *A. Couthouyi*, which Dr. Gould adopted in 1841.

Genus TRICHOTROPIS Broderip

T. cancellata Hinds, 68.

Vic., abundant. Dep. Bay, Comox, St of Georgia, Discovery Passage, Johnstone St., Goletas Channel, Q.Ch.Sd., and Q.C.I., (G.M.D.) 8 to 30 fms. and upwards.

T. inermis Hinds. 68.

Vancouver District, (Swan.)

Family NATICIDÆ

Genus NATICA Lamarck

N. clausa Brod. and Sby. 3.

Vic., Dep. Bay, Comox, Clayoquot Sd., (C.F.N.) St. of Georgia, Johnstone St., Beaver Harbour, Discovery Bay, Q.Ch.Sd., and Q.C.I., (G.M.D.) Low water to 70 fms. Frequently found fossil in the boulder-clay, (C.F.N.) Operculum shelly.

Subgenus LUNATIA Gray

N. (Lunatia) Lewisii Gld.

Vic., Sooke, Salt Spring I., Comox, and Clayoquot Sd., (C.F.N.) Malaspina Inlet, and Q.C.I., (G.M.D.) Near low water mark and below.

N. (Lunatia) pallida Brod. and Sby. 3.

Vic., (G.W.T., N.H.S., C.F.N.) Comox, (C.F.N.) Q.Ch.Sd., (G.M.D.) Operculum horny in all the specimens that I have seen.

Family LAMELLARIIDÆ

Genus LAMELLARIA Montagu

L. Stearnsii Dall.

Q.C.I., (G.M.D.)

Family VELUTINIDÆ

Genus VELUTINA Fleming

V. laevigata Linn.

Vic., and Dep. Bay, (G.W.T., C.F.N.) Comox, and Clayoquot Sd., (C.F.N.) Discovery Passage, (G.M.D.) Rather rare. 10 to 30 fms.

V. prolongata Cpr. 13, 16.

Large specimens, living, Vic., (C.F.N.) At low water. Smaller dredged. Living, but small, in roots of *Macrocystis* at Clayoquot Sd. Rare. [W.H.D.]

Family TRITONIDÆ

Genus TRITONIUM Link

T. Oregonense Redfield. 84, 38, 1a., 106. (*Priene Oregonensis*.)

Vic., abundant. Johnstone and Broughton Sts., Goletas Channel, Q.Ch. Sd., Johnstone St. and Q.C.I., (G.M.D.)

For comparison with *T. cancellatum* Lamarck, see Dall, No. 38. For dentition, see Aurivillius, 1a., pl. XIII, f. 8.

Family MARGINELLIDÆ

Genus MARGINELLA Lamarck

M. pyriformis Cpr. 13, 19, 6.

Vic., and Pedder Bay, (C.F.N.) Vesuvius Bay, (G.W.T.) Clayoquot Sd., (C.F.N.) Goletas Channel, Q.Ch.Sd., and Q.C.I., (G.M.D.)

Type specimen figured on pl. XX., f. 5, of No. 6.

Family OLIVIDÆ

Genus OLIVELLA Swainson

O. buplicata Sby. 94.

Living and very abundant at Clayoquot Sd., on sandy flats between tides and below, (C.F.N.) Abundant on west coast of V.I., (G.M.D.) Q.C.I., (G.M.D.)

O. batika Cpr. 13.

A few dredged off Beacon Hill, Vic., living, (C.F.N.) Dep. Bay, (G.W.T., C.F.N.) Baynes Sd. and Clayoquot Sd., (C.F.N.) St. of Georgia, Discovery Passage, Q.Ch.Sd., and Q.C.I., (G.M.D.) Low water to 8 fms.

See pl. XIX., fig. 7, of No. 6.

Family NASSIDÆ

Genus NASSA Lamarck

N. fossata Gld. 60, 62.

Barclay Sd., (Skinner, Cowley.) Clayoquot Sd., just below water mark to 20 fms., not abundant, (C.F.N.)

N. mendica Gld. 60, 62.

Vic., (N.H.S., G.W.T., C.F.N.) Dep. Bay, Ganges Harbour, &c., (C.F.N.) St. of Georgia, Johnstone St., Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.)

Family COLUMBELLIDÆ

Genus COLUMBELLA Lamarck

C. (Astyris) carinata Hinds. 68.

From west coast Indians, (C.F.N.) Goletas Channel, (G.M.D.) A smooth keeled shell, probably a variety of the next species.

C. (Astyris) gausapata Gld. 60, 62.

Esquimalt, Vic., &c., at low water and dredged in 10 to 20 fms. (N.H.S., C.F.N.) Clayoquot Sd., (C.F.N.) This is probably the shell referred to by Mr. Whiteaves, (105), under the name *Nitidella Gouldii* Cpr., collected by Dr. Dawson, in St. of Georgia, Quatsino Sd., Q.C.I. Not keeled, more regular in outline than the last.

Genus AMPHISSA Adams

A. corrugata Reeve. 86.

Whole coast to Q.C.I. Abundant, low water to 30 fms. and upwards.

Family MURICIDÆ

Genus PURPURA Bruguière

P. crispata Chemn. 22.

Whole coast to Q.C.I., (G.M.D.) Littoral.

P. canaliculata Duclos. 51.

Vic. to Q.C.I., (G.M.D.) Littoral.

P. saxicola Val. 102.

Vic. to Q.C.I., (G.M.D.) Littoral.

Genus OCINEBRA Leach

O. lurida Midd. 77, 6.

Vic., not rare. Clayoquot Sd., Comox, &c., (C.F.N.) Johnstone St., Q.Ch.Sd., and Q.C.I., (G.M.D.) At and near low water mark.

Figured in No. 6, pl. XX., fig. 8.

O. interfossa Cpr. 13, 21.

Vic., and Esquimalt Harbour, abundant. Clayoquot Sd., (C.F.N.) Johnstone St., Goletas Channel, Quatsino Sd., and Q.C.I., (G.M.D.) With the former, but more abundant.

Genus PTERORHYSIS Contr

(Nom. CEROSTOMA pre-occupied. [W.H.D.])

P. foliatus Gmelin. 56.

Vic., not plentiful, (N.H.S., C.F.N., &c.) Pender Island, abundant, (C.F.N.) Clayoquot Sd., (C.F.N.) St. of Georgia, Johnstone and Broughton Sts., Goletas Channel, Q.Ch.Sd., Discovery Passage and Q.C.I., (G.M.D.) Low water to 10 fms.

Genus TROPHON Montfort

T. multicostatus Esch. 52.

Vic., not rare, (N.H.S., G.W.T., C.F.N.) Q.Ch.Sd., Johnstone St., (G.M.D.) Low water to 20 fms.

T. Orpheus Gld. 60, 62.

Vic., the most abundant species of Trophon, (C.F.N.) Dep. Bay, (C.F.N.) Q.Ch.Sd., and Q.C.I., (G.M.D.) 10 to 30 fms.

Mr. Dall, (39, p. 303) says, that *T. Stuarti*, Smith, "is a fine pale specimen of the Alaskan and Oregonian *T. Orpheus*." *T. Stuarti* is a very rare variety at Victoria, and I have only collected one living specimen of it to more than one hundred of *T. Orpheus*.

T. Stuarti E. A. Smith. 91.

Vic., (J. Vidler, G.W.T., C.F.N.) Dredged in 20 fms.

Type specimen two and one-eighth inches in length. Mine is one inch and three-quarters. The longest *T. Orpheus* I have seen is just one inch long; Dr. Gould's type measuring half an inch.

T. tenuisculptus Cpr.

Vic., rather rare, (G.W.T., C.F.N.) Quatsino Sd., St. of Georgia, Seymour Narrows, Goletas Channel, Discovery Passage, Johnstone St., Q.Ch.Sd., Quatsino Sd., and Q.C.I., (G.M.D.)

T. Dalli Kobelt. 37, 35, 39.

Vic., (Richardson, G.W.T., C.F.N.)

Described in Proc. Cal. Acad. Sci., 1877, by Mr. Dall, under the name of *T. muriciformis*, Dall. Re-named *Dalli* by Kobelt on account of the existence of a shell, *Trophon*, or *Eupleura muriciformis*. (See Dall, 39, for additional information as to this last species, and for illustration. Pl. IV., fig. 6.)

Family BUCCINIDÆ

Genus BUCCINUM Linn

B. percrassum Dall. 37, 38, 106.

(*B. polare* Gray, var. *compactum* Whiteaves. 103, 105.)

Vic., two dead specimens on beach, (J.R.) and three dead in 18 fms. off Macaulay Pt., (C.F.N.) Q.Ch.Sd., dead, (G.M.D.) In boulder-clay at Vic., (C.F.N., G.W.T., W.H.)

Mr. Whiteaves supplies the following quotation from Lt. Ray's Report, (37), p. 180. Under *B. polare* Mr. Dall states that he has seen "two specimens of a singularly thick and short variety, *percrassum*, from the Arctic, north of Bering Strait. It must be exceedingly rare; the upper whorls are smaller, less inflated, and less turreted than in the normal form. The operculum is also proportionately larger and more oval. It may prove distinct from *B. polare*."

In his report on Bering Island Mollusca, (38), p. 216, Dall says, of two specimens collected on Bering Island by Stejneger, that the shell of these is thick, like the Arctic form figured by Dr. Kobelt, (Mon. Buc., Mart and Chemn.), but smaller and much darker. Mr. Dall has recently informed me that *B. percrassum* appears to be a good species, abundant on Commander Islands.

B. cyaneum Brug. Var. *Morchianum* Fischer. 54.

Vic., at low water, one dead, (C.F.N.) Sent from Alert Bay, a few dead specimens, (G.W.T.) [W.H.D.]

Genus CHRYSODOMUS Swainson

C. (Sipho) verkruzeni Kobelt. 72.

One, dead, Q Ch.Sd., (G.M.D.) 30 fms.

C. (Sipho) tabulatus Baird 2.

Vic., abundant, (N.H.S., G.W.T., C.F.N.) Dep. Bay, rare, (C.F.N.) 10 to 20 fms.

C. (Mohnia) Frielei Dall. 42.

Off the north coast of V.I., 1888. ("Albatross.")

C. (Neptunea) fornicatus Gmelin. 56,

Vic., one living, (C.F.N.) Dead, (G.W.T., C.F.N.)

Of this species Mr. Dall says "the line can hardly be drawn between the most nearly allied specimens of this and (smooth) forms of *C. liratus*."

C. (Neptunea) lyratus Martyn. 75.

Vic., two large dead specimens, (C.F.N.) QCh.Sd., four living and one dead, (G.M.D.)

C. (Neptunea) rectirostris Cpr. 13, 21.

Vic., living, (J.R., C.F.N.) dead, (G.W.T.) In 20 fms.

C. Harfordi Stearns. 99, 42.

Q.C.I., living, at low water, (G.M.D.)

Illustrated in Dall's 'New West American Shells,' (42), pl. IV., fig. 6.
Originally found in Mendocino Co., California.

C. Kennicotti Dall. 30.

Vic., one dead specimen, (G.W.T.) [W.H.D.]

Mr. Dall, (Proc. Cal. Acad. Sci., 1871-73,) gives the distribution of this species 'from the Shumagins eastward.'

C. phœniceus Dall. 42.

Near Goletas Channel, Q.Ch.Sd. ("Albatross.")

Genus EUTHRIA Reeve

E. dira Rve. 85.

Vic., Salt Spring I., Dep. Bay, Comox, Clayoquot Sd., one of the commonest littoral species, (C.F.N.) Northwest and northeast coast of V.I., to Q.C.I., (G.M.D.)

VICTORIA, B. C. :

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ERRATA AND ADDENDA

- p. 17. For *Haduna* read *Hadena*.
- p. 27. Fifth line from the bottom.
Rhinotihodes should be *Rhinolithodes*.
- p. 28. Eighth line from top.
R. Wosnessenokii should be *R. Wosnessenskii*.
- p. 32. Tenth line from the top.
T. puncta cœlata should be *T. punctocœlata*.
- p. 41 to 47. The numbers following specific names refer to the list of authors given on pp. 32 to 72.
- pp. 55, 56 and 57. The species of *Chitons* marked with an asterisk have been identified by Mr. H. A. Pilsbry, [H.A.P.] who also kindly furnished notes upon some of their characteristics. Their arrangement in *genera* is Mr. Dall's of 1878, (vide No. 36) and differs from Mr. Pilsbry's more recent classification.

